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SCIENTIFIC RESEARCH, FOREST ASSESSMENT AND DEVELOPMENT OF CRITERIA AND INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT

Programme element III.1 (b): Methodologies for proper valuation of the multiple benefits of forests

Report of the Secretary-General

SUMMARY

The present document reports on implementation of decisions of the United Nations Conference on Environment and Development related to the first programme element of category III, "Scientific research, forest assessment and development of criteria and indicators for sustainable forest management", of the work programme of the Ad Hoc Intergovernmental Panel on Forests. As requested by the Panel at its first session, two reports have been prepared for this programme element. The first (E/CN.17/IPF/1996/6) deals with the assessment of multiple benefits of all types of forests. The second (the present report) presents an initial analysis of the methodologies for valuing the multiple benefits derived from forests. It includes a general overview of the issue, and a short update of its current status, and is followed by a description of the range of considerations for the substantive discussion of this programme element at the second session of the Panel.

The need to value realistically the goods and services of forests, forest lands and wooded lands has been recognized for quite some time but such valuation has seldom been seriously attempted. Indeed, it has been pointed out that a major cause of the failure of sustainable forest management, and even of deforestation and transfer of forests to other land uses, is the inadequate recognition and underestimation of the values of the many goods and

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services provided by forests at the local, the national, the regional and the global level. However it must be stressed that the application of valuation techniques in the real world faces the reality of actual forces influencing the fate of forests and pressures for land-use changes. The proper valuation of goods and services from forests provides information for decision-making but is not a panacea when addressing deforestation or forest degradation.

Valuation of forests is complex, as it involves issues of measurement of elements that escape the conventional approaches to economic analysis. The identification of values is also strongly influenced by the specific interest and perspective of the groups considered, whether they comprise the State, private owners or industries, local communities, or forest dwellers. Valuation should therefore be used to respond to questions that must be asked in pursuing sustainability while taking into account the variety of concerns of major players in forest management and utilization and in developing the dialogue among policy makers, interest groups and the public at large. Ultimately, valuation is a tool in making decisions about selecting orientations for forest management, recovering their full value and allocating land under forests in situations of competition with alternative use options. Undertaking the valuation of the goods and services of a forest at the local, national, regional and global levels is a complex and costly exercise that must be carried out in response to specific demands and guided by the type of decisions for which the results are to be used.

A review of the literature indicates an eagerness in attempting economic valuation. Studies whose aim was to value recreational goods and services were carried out in the United States of America as early as the late 1950s and 1960s. Recently, one may note a new and widespread interest in finding out what the value of forests might be, and also much confusion. This is hardly surprising, given the complexity of the issue and the practical problems in the way of establishing such values. Classical and neoclassical economic theory, on which conventional analysis bases its conceptual framework, did not pay attention to environmental dimensions. They were viewed as externalities or side-effects. Thus, conventional analysis has often failed to adequately capture many forest benefits that do not enter the market or cannot for other reasons be adequately valued in economic terms or are perceived in other sectors.

Values are classified as direct use values, indirect use values, existence value, and option (or non-use) value.

A number of valuation techniques are reviewed including market prices, efficiency (or shadow) prices, the hedonic pricing method, the travel cost method, the production function approach, the related goods approaches, constructed market techniques, and cost-based valuation. It is stressed that valuation is to be a neutral analytical tool and not an advocacy instrument.

Cost-based valuation considers indirect opportunity costs, restoration costs, replacement costs and relocation costs, as well as preventive/defensive expenditures.

The present review suggests that, from a technical point of view, there exists a large body of techniques, methodologies and approaches for dealing with forest valuation, although some of them are too theoretical, and difficult to apply as well as time-consuming and costly; and that some experiences of the application of valuation techniques exist from which lessons can be drawn. One must also stress that the application of even the most traditional valuation methods relies heavily on the availability of better data, part of which should originate from the assessment of forest resources. It is critical that the information not be restricted to the forest sector - that it should also be linked to other sectors that capture benefits generated by forests and woodlands.

It is suggested that the Panel may wish to pay special attention to deciding if it wishes to give priority to (a) the furthering of work on valuation stricto sensu which would imply that continuing efforts are justified by a demand for full valuation encompassing other dimensions than those incorporated in traditional methods in order to actually influence decisions or (b) the political issues raised once value is established, in other words how to direct serious attention towards the outcome of valuation, its application and the implications for decision-making and for reconciling the concerns of the various interest groups or stakeholders.

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INTRODUCTION

1. The present document reports on implementation of the decisions of the United Nations Conference on Environment and Development related to the first programme element of category III, "Scientific research, forest assessment and development of criteria and indicators for sustainable forest management", of the work programme of the Ad Hoc Intergovernmental Panel on Forests. As requested by the Panel at its first session, two reports have been prepared for this programme element. The first (E/CN.17/IPF/1996/6) deals with the assessment of multiple benefits of all types of forests. The second (the present report) presents an initial analysis of the methodologies for valuing the multiple benefits derived from forests. It includes a general overview of the issue, and a short update of its current status, and is followed by a description of the range of considerations for the substantive discussion of this programme element at the second session of the Panel.

2. The work under this programme element (III.1) is guided by the decisions taken at the third session of the Commission on Sustainable Development and further elaborated at the first session of the Ad Hoc Intergovernmental Panel on Forests.

3. The Commission, at its third session, defined programme element III.1 as consisting in the need to "review existing periodic assessment of forests, including relevant socio-economic and environmental factors, at the global level; identify shortfalls in present assessments relative to policy considerations; and recommend practical ways of improving such assessments. Examine ways to broaden the scientific knowledge and the statistical database available in order to better understand the ecological, economic, cultural and social functions performed by all types of forests. Promote the further development of methodologies for properly valuing the multiple benefits derived from forests in the form of goods and services, and subsequently to consider their inclusion within the system of national accounting, drawing upon work that has been already undertaken by the United Nations and other relevant organizations". 1/

4. Subsequently, the Panel, at its first session, emphasized the need for the preparation of two reports (see document E/CN.17/IPF/1995/3, para. 18 (III.1)):

(a) One would identify ways to expand on the Food and Agriculture Organization of the United Nations (FAO) Forest Resources Assessment with regard to the qualitative and quantitative assessment of all types of forests, including information on biological resources and non-wood forest products and services; information on environmental and social benefits; standardization of tropical and non-tropical data; collection of broader types of forest statistics; coordination of forest monitoring with remote sensing and geographical information systems; the continuous nature of the assessment; and the accessibility of information generated to all interested parties;

(b) The second report (this document) would consider ways to promote the further development of methodologies for properly valuating the multiple benefits derived from forests, in the form of goods and services, and

subsequently consider their inclusion within the systems of national accounts, drawing upon work that has already been undertaken by the United Nations and other relevant organizations and assessing progress in the application and incorporation of innovative approaches into national accounts. Consideration of this item should benefit from deliberations under programme elements IV, III.2 and other ongoing work undertaken in this field.

5. The science community should be involved in the preparations of these analyses in order to explore ways and means of enhancing the scientific basis for such assessments and valuations (see E/CN.17/IPF/1995/3, para. 18 (III.1)). At the first session of the Panel, it was decided to schedule programme element III.1 for substantive discussion at the second session, to be held in Geneva (11-22 March 1996).

6. This report was prepared by the Food and Agriculture Organization of the United Nations (FAO), in collaboration with the World Bank as lead agency for programme element III.1 (valuation) in consultation with the secretariat of the Ad Hoc Intergovernmental Panel on Forests in the Division for Sustainable Development of the Department for Policy Coordination and Sustainable Development of the United Nations Secretariat. In addition, contributions were received from the Centre for International Forestry Research (CIFOR).

7. This report is an initial response to the request of the Panel at its first session, taking into account the complexity of the subject and the fact that the Panel has programmed an initial substantive discussion at its second session, and a further substantive discussion at its third session. The report is on valuation methodologies but does not cover the inclusion of values within the systems of national accounting. It is meant to present in a concise manner some critical elements underlying approaches to valuation and a brief discussion of the status of current methodologies with a view to seeking the guidance of the Panel on the future development of work on this subject.

8. The issue of proper valuation of forest goods and services is closely linked to and in fact dependent on reliable information on the forest resource, information of both a quantitative and a qualitative nature including physical as well as socio-economic elements. In this sense, it must be stressed that the two topics under programme element III.1 of the work programme of the Panel, namely, forest resource assessment and the valuation of forests, are closely related even if they are distinct in nature.

9. The need to value realistically the goods and services of forests, forest lands and wooded lands has been recognized for quite some time but seldom attempted seriously. Indeed, it has been pointed out that a major cause of the failure of sustainable forest management, and even of deforestation and transfer of forests to other land uses, is the inadequate recognition and underestimation of the values of the many goods and services provided by forests at the local, the national, the regional and global the level. However it must be stressed that the application of valuation techniques in the real world faces the reality of actual forces influencing the fate of forests and pressures for land-use changes. The proper valuation of goods and services from forests provides information for decision-making but is not a panacea for deforestation or forest degradation.

10. Valuation of forests is complex as it involves issues of the measurement of elements that escape the conventional approaches of economic analysis. The identification of values is also strongly influenced by the specific interest and perspective of the groups considered whether they comprise the State, private owners or industries, local communities, or forest dwellers. Valuation should therefore be used to respond to questions that must be asked in pursuing sustainability while taking into account the variety of concerns of major players in forest management and utilization and in developing the dialogue among policy makers, interest groups and the public at large. Ultimately, valuation is a tool in decision-making as regards selecting orientations for forest management, recovering their full value and allocating land under forests in situations of competition with alternative use options. Undertaking the valuation of the goods and services of a forest at local, national, regional and global levels is a complex and costly exercise that must be carried out in response to specific demands and guided by the type of decisions for which the results are to be used.

11. In section I below, the report briefly sets the valuation of forests in context. Section II presents, in a concise manner, the methodologies currently available and, whenever possible, some lessons arising from their application. Section III deals with choosing an economic valuation method. The final section (IV) outlines some considerations for the Panel's attention and seeks its guidance for defining directions for future work on the subject.

I. VALUATION OF FORESTS IN CONTEXT

12. The context in which efforts to manage forests sustainably are taking place is one of increasing competition for scarce resources, particularly natural resources, and of concern for the fate of natural forests. 2/ Decision-making by Governments, private enterprises, local communities and farmers concerning the conservation, management and utilization of a resource are largely influenced by the value they attach to this resource and the costs and benefits involved in its utilization - or non-utilization. Valuation of forests is therefore about increasing the knowledge of the range of values associated with forests. It provides useful information to all those associated with decisions and choices among management options and alternate uses of forests and lands that meet the needs of the groups involved. It must be stressed that valuation is intended to be a neutral analytical tool and not an advocacy instrument.

13. This report focuses on economic values associated with forests and woodlands, that is to say, values to which some monetary measure can be assigned. This is not to deny that other types of values must be recognized such as social, ethical, cultural and religious ones, and that these should be taken into consideration. However, in most cases the principal questions that decision makers, be they government officials or community leaders or private entrepreneurs, ask will deal with economic values rather than with all relevant values and their interactions; for example, what is the nature of economic values and their usefulness? What are the underlying costs and benefits? How can they be used as a basis for comparing options and deciding on them? It is important to stress that economic value measures are primarily useful in comparing and making decisions on changes, in other words, in prioritizing

practical action including alternative uses of forests as well as investments and, ultimately, change in land use. Valuation might also be required for setting levels of possible compensation to those who are obliged to conserve forests beyond their own needs or to refrain from using their full production potential. The valuation approach will therefore be shaped by the decision-making context within which the information is to be used and will focus on answering the basic questions when comparing a proposed change with the status quo. In a case where no change is envisaged, valuation measures are not required for other than curiosity purposes.

14. Economic values have been associated with forestry in the past, in keeping with the traditional orientation of forest management which was towards production of timber and other products for the market. Market prices were thus considered to be the source of information determining the value of forest production. There has been an increased realization of a wide variety of goods (foods, fuels, medicines, fodder, and so forth) and services (land and water protection, amenity and aesthetics, biological diversity, influence on the biosphere, and so forth); however, the traditional valuation methods cannot capture many of those goods and services which are non-marketed or non-marketable, or intangible, or relate to benefits derived outside the forestry sector or to influences on it that are external. The relevance of these goods or services at the local level must be identified; however, the relevance of others are of a wider nature such as encompasses the national, transboundary regional or global level.

15. There are no absolute values, as they are based on perceptions by individuals and groups which are subject to dynamic changes in their situation, needs and aspirations. These perceptions in the particular case of forests have been evolving rapidly in recent years with the broadening of interests, the increasing number of interest groups, the diversity of perceptions by different groups and the awareness of the wide range of goods and services provided by forests at local, regional, national and global levels. Furthermore, values involve costs and benefits whose distribution among interest groups is often a significant element in terms of its political nature and of making decisions. The social and environmental impacts may also change rapidly and the direction of change may be different for the various groups affected.

16. In an increasingly populated world with growing needs for land to grow food and agricultural crops, the sustainability of forests and their management must also be seen in relation to that of alternative uses of the land. The decision depends on efficient land capability assessment and on "clearing-house" arrangements for major land-use changes that take into account other factors which could be even more important than land capability. Socio-economic and physical data provided by forest and other land-use assessments are needed for proper valuation of forests and to enable comparisons with the valuation of other use options for decisions in a sustainable livelihood perspective. Valuation of forests must therefore be seen not as a necessity within a narrow sectoral context but as part of a broader effort covering alternative land uses. This approach provides the necessary base for moving towards sustainable land-use systems within which forests are clearly recognized as an option with its own validity in contributing to sustainability at local, national and global levels.

II. REVIEW OF METHODOLOGIES

17. A review of the literature indicates an eagerness in attempting economic valuation. Studies whose aim was to value recreational goods and services were carried out in the United States of America as early as the late 1950s and 1960s. Recently, one may note a new and widespread interest in finding out what the value of forests might be, and also much confusion. This is hardly surprising, given the complexity of the issue and the practical problems in the way of establishing such values. The classical and neoclassical economic theory on which conventional analysis bases its conceptual framework did not pay attention to environmental problems. They were viewed as externalities or side-effects. Thus, conventional analysis has often failed to adequately capture many forest benefits that do not enter the market or cannot for other reasons be adequately valued in economic terms or are perceived in other sectors.

18. In response to the limitations of traditional approaches for the valuation of forest goods and services, new techniques have been developed which are often faced with inadequate data and knowledge about economy-environment interactions. While some of them are attractive in theory, they are also difficult to apply in practice and often expensive and time-consuming. As has already been stressed, the estimation of the total economic value of forest resources faces difficulties in terms of placing monetary values on unmarketable or intangible goods and services and reflecting the variety of the perceptions of interest groups. In many cases, economic valuation methods provide estimates of values in orders of magnitude. Although values expressed in monetary terms facilitate comparison they should be used with care as they may provide only a partial analysis and be misleading in decision-making.

19. Conceptually, the total economic value (TEV) of a forest is equal to its (a) total use value (TUV) plus its (b) total non-use value (TNV). Use value can be divided into direct use value (DUV), indirect use value (IUV) and option value (OV) (it is important to stress that these values are intended net of costs). These relationships can be expressed as:

$$TEV = TUV + TNV$$

and (where NUV is non-use value)

$$TEV = (DUV + IUV + OV) + NUV$$

DUV can be subdivided into consumptive values, for example, timber, fuelwood and non-wood forest products, and non-consumptive values, for example, recreational activities and sightseeing. IUV covers services, that is, ecological functions performed by forest resources, for example carbon fixation, water-flow regulation, climate regulation and biodiversity. Existence value (EV) is basically people's decision to value the existence of the forest resource coupled with the intention not to use it in future or to keep it available as, among other things, a contributor to the preservation of biological diversity and a source of supply of genetic resources. OV and NUV are associated with people's option to use the forest, or merely have it available, in the future. They are unrelated to use values - in fact, they are much more linked to

cultural elements, including moral and ethical beliefs as well as altruistic motives. Even if measuring them in economic terms is difficult, they should be recognized in valuing the contributions of forests to human welfare.

20. A summarized presentation to facilitate the understanding of the different values associated with forest contributions to human welfare is given in annex I.

21. A range of different valuation techniques exist. Before presenting them, it must be stressed that the actual issue is not so much that of their theoretical appropriateness but of the easiness and reliability with which analysts can attach realistic values to parameters and so derive results that are sensible and replicable under difficult data conditions. Especially important is the capacity of a given methodology to yield good results relatively free from analyst bias in a situation without market signals.

22. Valuation techniques need also to be examined in relation to their applicability to a number of specific categories of situations in which value information is particularly critical for decision-making. Examples of such categories are a major change in forest utilization such as the establishment of a forest reserve for the protection of biological diversity, the afforestation of denuded land, a major change in land use affecting forests or woodlands, agroforestry, watershed management, the conservation of forests for the stability of the biosphere and as a contribution to the global carbon balance, and so forth.

23. Valuation techniques were initially utilized in the United States and Canada, later in Europe and more recently in developing countries. The main techniques vary from those that rely on actual market prices to those that rely on hypothetical methods. These techniques include market prices, efficiency (shadow) prices, hedonic pricing, the travel cost method, the production function approach, related goods approaches, constructed market techniques, and cost-based valuation. Most of them have been already applied in a developing-country context. Detailed reviews of each one can be found in the literature (see annex II for a summary of these techniques and their advantages and disadvantages).

A. Market prices (for traded economic goods and services)

24. Market prices are the result of an interaction between consumers and producers over the demand and supply of goods and services. If this transaction is carried out using currency, the value established in the market is the market price. The assumption underlying this is that these prices reflect economic scarcity and hence are economic efficiency prices. However, this is not always true. Generally, there are distortions in the market prices. These distortions can be attributed to taxes, subsidies, exchange rates and so on. When this exists, appropriate adjustments are required. The derivation of adjusted prices (commonly called shadow prices) is well discussed in any standard project analysis handbook. However, if the transaction is carried out by some form of barter or exchange without the use of currency, the value established in the market is the market exchange value.

25. A study in Amazonian Ecuador 3/ estimated the present value of net revenue based on the potential extraction of non-timber forest products (NTFPs), seven fruits, three medicinal barks and one resin. It was carried out using market prices techniques in three one-hectare permanent primary forest plots at the Jatun Sacha Biological Station in the Upper Napo region of Amazonian Ecuador. These estimated values were compared with the returns from alternative land uses, namely wood extraction and cattle ranching in these areas. The study concluded that the current value of net revenue from NTFP collection was US$ 2,830 in the upland plots and US$ 1,257 in the alluvial plot, and these returns were significantly higher than those from alternative land uses in this area. The authors called attention to the fact that the results of the study also raised an important paradox: if the value of NTFPs exceeded alternative land uses, why did the region seem so little intent on adopting these NTFP-related uses? This paradox raises another question regarding the meaning of value per se? The results of the study suggest that valuing a piece of forest must be complemented by other measures to turn these values into revenue flows.

B. Efficiency (or shadow) prices (for effective/efficient resource allocation)

26. The market price does not necessarily mean the "proper" price and/or reflect the true economic efficiency price. There are market and policy failures that can distort market prices. Market failures concern to the inability of market prices, under certain conditions, to reflect accurately the value of environmental goods or services; for example, the upstream polluter has no incentive to account for the costs he imposes on a downstream user of the river. Policy failures concern instances where government policies have unintended effects, or sometimes even side-effects or cause resource-use behaviour inappropriate from a societal perspective (for example, when subsidies given by Governments for the use of resources that lead to or encourage resource overuse).

27. In financial analysis, no account is taken of any of these failures that distort market prices. Therefore, it is advisable to look at their economic value in order for their value to society as a whole to be reflected, as in the case, for example, of alternative forest land uses. To do so, the market price is adjusted. There are various methods for correcting market and policy distortions. The derivation of adjusted prices which are commonly called shadow prices, is well discussed in any standard project analysis handbook.

28. Shadow prices should be cautiously used because:

(a) Market prices are often more readily accepted by decision makers than artificial values derived by the analyst;

(b) Market prices are generally easy to observe, both at a single point and over time;

(c) Market prices reflect the decision of many buyers, whereas calculating shadow prices often relies on the objectivity of judgement of the analyst;

(d) The procedures for calculating shadow prices are rather imperfect and therefore estimates can, in certain cases, introduce larger discrepancies than even the simple use of imperfect market prices.

29. Thus each case should be analysed within the context in which the valuation is being made, and should take into account the data and resource constraints. There cannot be a simple blueprint for every case.

C. Hedonic pricing method (for non-marketed goods and services)

30. The hedonic pricing method is one of the systems that use a surrogate market to input the value of non-marketed goods and services; for example, the market value differences for similar forest properties are used to reflect the value of some environmental services or costs that varies across the properties. There are some limitations to this method, in so far as caution needs to be applied. One of these limitations involves the fact that there is little evidence to date to indicate that land, labour or other market prices are sensitive to the environmental amenities provided by forests. Furthermore, its data requirements are substantial and the forest resource, function or attribute being valued needs to be well known and easily measurable.

31. This method has been applied in developed countries, for example, to estimate the costs of air and noise pollution and of changes in amenities. However, given the fairly stringent assumptions on which this method is based and its data requirements, countries need to have a fairly good knowledge of their forest resource. In many countries, it will require significant effort to build the skills needed for analysis as well as for deriving the kind of results leading to effective decision-making and planning.

D. Travel cost method (effort/cost for consumers to obtain goods/services)

32. This method recognizes that for some goods or services the consumer may have to incur substantial cost (in time or money) to obtain a particular good or service. It assumes that the value to the consumer is at least equal to the travel costs the consumer is willing to incur to obtain the desired good or service. For example, a recreational experience may involve significant travel expenses; and gathering free fuelwood may require a considerable amount of time. This method has been used extensively in developed countries, especially in the United States, since the 1950s and 1960s, to value recreational goods and services. More recently it has also been carried out in some developing countries. However, despite the improvements in this method effected since its early application, its usefulness in valuing alternative recreational uses is still constrained by a number of factors. These factors are mainly the large amount of data required, the restrictive assumptions about individuals' behaviour and the sensitivity of the results to the statistical methods used to specify the demand relationship. It is also important to bear in mind that gathering free fuelwood is not necessarily a function of the consumer's willingness to incur travel costs in order to obtain the fuelwood. On the contrary, it is much more a consequence of his/her state of poverty. In other

words, since around the world the consumer is too poor to be able to afford to pay for the fuelwood, he/she needs to travel long distances to gather it free.

33. An example of application of the travel cost method in the context of tropical forests can be found in the estimation of the value of ecotourism to domestic users of the Monteverde Cloud Forest Biological Reserve in Costa Rica.

E. Production function approach (to capture indirect, for example, ecological, values)

34. The production function approach to valuation may be used to capture the indirect use value of regulatory ecological functions of tropical forests through their contribution to economic activities. This approach consists of a two-step procedure. First, the physical effects of the environment on economic activity are determined. The second step consists of estimating the monetary value of the ecological function. For example, the cost of siltation of irrigation canals can be expressed in terms of reduced availability of water for crop production. A loss of net farm income thus defines the extent of the damage imposed by upstream erosion. As another example, consider the wind-break: it can increase crop values behind it, and those increased values can be taken as a proxy measure of the minimum value of the benefits from the wind-break (there may also be others, such as fodder, shade for cattle, and so forth). In its most straightforward applications, this method uses actual market prices - or, when distortions exist, appropriately modified market prices - to value economic production.

35. Applying this approach to the various indirect uses of forests is a useful method of estimating these non-marketed, but often significant, economic values. This method has been used extensively in developed countries and frequently in developing regions to estimate the impact of deforestation, soil erosion, wetlands and reef destruction, and air and water pollution on agriculture, forestry, fisheries, health and materials damage. However, it is a prerequisite that the relationship between the environmental regulatory function of the forest and the economic activity it supports be well understood. Frequently, this relationship is not well understood, and a slight change in assumptions leads to a drastic change in results. For instance, in relation to the timing of sedimentation, most valuation studies assume that sedimentation will be reduced in the first year and that benefits will occur in the near future. This means that their net present value is fairly significant. However, many soil stabilization benefits may occur only after some years, if not decades. The net present value is, in this case, rather small. In addition, the impacts of market conditions and regulatory policies affecting production decisions need to be taken into account in the application of this approach.

36. Applications of the production function approach may be most straightforward in the case of single use systems, for example, forests in which the predominant economic value is a single regulatory function. In the case of multiple use systems, for example, forests in which a regulatory function may support or protect many different economic activities, or those that may have more than one regulatory ecological function of economic value, applications of this approach are slightly more problematic. In particular, assumptions

concerning the ecological relationship among these various multiple uses must be carefully constructed.

37. This approach was employed to value the ecological benefits of rural afforestation programmes in northern Nigeria.

F. Related goods approaches (to estimate values indirectly)

38. A non-marketed good or service may be related to a marketed good or service. By using information about this relationship and the price of the marketed product, the analyst may be able to infer the value of the non-marketed product. This broadly defined related goods approach consists of three similar valuation techniques: the barter exchange approach, the direct substitute approach, and the indirect substitute approach.

1. Barter exchange approach (to estimate the barter value of, for example, wild mushrooms)

39. There are many forest products that are not widely traded in formal markets, for example, wild fruits, nuts and vegetables, medicines and structural fibres. However, some of these forest products may be exchanged on a non-commercial basis through a process of barter. If the bartered good that is exchanged for the forest product is also sold in a commercial market, then it may be possible to derive the value of the non-marketed good using information on the relationship (that is, the units of exchange) between the two goods and the market value of the commercial good. For example, consider a situation where leafy vegetables are harvested from the tropical forest and consumed locally but not sold in the local market. Given that leafy vegetables are non-marketed goods, it is not possible to value these goods directly using market prices. However, if a basket of leafy vegetables of known weight is routinely exchanged for six eggs through a process of barter and six eggs fetch US$ 1 in the local market, then it can be inferred that the basket of leafy vegetables is worth US$ 1; that is, the market price of the marketed good is used to estimate indirectly the value of the non-marketed good.

40. As with all valuation techniques, care must be taken in applying this approach. For example, bartering may occur in an "imperfect" non-commercial market and the rate of exchange may reflect a wider range of socio-economic factors than just the value of the goods exchanged. There are few, if any, studies that have attempted to infer the value of a forest product from the marketed value of a bartered good. However, this should not exclude the technique from being considered a potentially useful valuation approach, especially in developing countries where bartering is common.

2. Direct substitute approach (to estimate the value of, for example, fuelwood)

41. If forest goods used directly are non-marketed (for example, fuelwood), then the value of their use may be approximated by the market price of similar goods (for example, fuelwood purchased from other areas) or the value of the next best alternative/substitute good (for example, kerosene or charcoal). 4/ The extent to which the value of the marketed good reflects the value of the non-marketed good depends, to a large extent, on the degree of similarity or substitution between the two goods. That is, if the goods are perfect substitutes then their economic values should be very close. As the level of substitution decreases, so does the extent to which the value of a marketed good can be taken as an indication of the non-marketed forest good. Once again, market imperfections may distort the economic value of the good or service reflected in the market-place.

42. The substitute good approach has been used for the economic valuation of wetland benefits in the Hadejia-Jama are flood plain of north-east Nigeria.

3. Indirect substitute approach (to compare a non-marketed good/service with a close substitute)

43. The techniques presented above are not always applicable in remote areas and rural settings in developing countries. An alternative but second-best approach to valuation is the indirect substitute approach, which does not relate directly to willingness to pay.

44. The indirect substitute approach is similar to the direct substitute approach but requires one additional step in the valuation procedure. This additional step consists essentially in combining the production function approach with the direct substitution approach. That is, if a non-marketed forest good has a close substitute then it may be possible to derive the value of the non-marketed forest good from the value of the substitute good. However, if the value of the substitute good cannot be determined directly from the market then it may be possible to derive its value indirectly, by analysing the change in value of economic output caused by a change in the use of the substitute good as an input into production.

45. However, the indirect substitute approach is necessarily based on fairly stringent assumptions about the level of substitution between the two goods, the role of the substitute good as an input into economic output, and the value of the economic output. This technique is also fairly data-intensive. Given the tenuous link between the item being valued and the actual valuation procedure and the heavy data requirements, this approach can be expected to provide only rough indications of value.

46. This approach was applied in a cost-benefit analysis of a management programme for two forested watersheds in Nepal. Fuelwood was valued in terms of the alternative uses of its closest substitute, namely, cattle dung, which can be dried and burnt when wood is unavailable. The opportunity cost of using cattle dung as fuel rather than as fertilizer was estimated in terms of losses

in food grain production resulting from lower dung inputs into agricultural production.

G. Constructed market techniques (hypothetical "willingness to pay")

47. Constructed market techniques measure individuals' willingness to pay (WTP) to continue receiving benefits, or their willingness to accept (WTA) compensation in return for forgoing benefits. This is done by presenting people with a hypothetical or simulated market situation and either directly eliciting consumer preferences for the object of the valuation or obtaining preference orderings which can then be anchored to a revealed preference. 5/ It is important to note that both evidence and theory indicate that, for a particular measurable change in the provision of a good, measures of WTA and WTP will not necessarily be identical - WTA will exceed WTP. The use of WTA as a measure of economic welfare in examining unique environmental goods has been questioned since the difference between WTP and WTA is likely to be particularly large in such cases.

48. Within this context, some caution should be exercised in the use of WTP and WTA. First, an accurate initial identification of the object, or property right, that is being measured must be made. This should lead to a proper assessment of whether a measurement of WTP or WTA is called for. Second, as they do not measure the same property right, it is important to avoid taking WTA as a measure of WTP, and vice versa.

49. The simulated market technique could be applied, for example, to the valuation of tropical forests as a means to investigate option and existence values held by non-tropical populations. The usefulness of such an investigation to the tropical country owner of the resource is not clear. What is the purpose of a survey to determine WTP and/or WTA, for example, to preserve the Amazon forest if the person does not even know where exactly the Amazon is located? On the other hand, the person can answer in terms of any value since he/she is not actually going to pay anything. However, would this value be the same if he/she had to actually pay? Beyond this one possibility, these techniques are as yet of limited usefulness in evaluating natural resource issues in developing countries as regards the task at hand.

1. Contingent valuation method (a consumer's perceived value of a good/service)

50. Interest in the contingent valuation method (CVM) has increased over the last decade or so. CVM techniques use one of two measures of consumer's surplus: compensating variation (CV) or equivalent variation (EV). CV is the amount of payment or change in income necessary to make an individual indifferent with respect to an initial situation and a new situation with different prices. EV may be viewed as a change in income equal to a gain in welfare resulting from a change in price. This method is used to estimate the consumer's WTP for a specified good or service or WTA compensation for receiving an undesired good or service. In practice, it is usually derived from the

responses of potential consumers to a hypothetical exchange situation. The method assumes that the consumer's expressed WTP in a hypothetical situation is a measure of the value to the consumer in an actual situation. It is particularly difficult to apply meaningfully when the respondent is asked to express a value for many functions of the forest that have no established monetary market value, such as provision of cleaner water, which might become available in a hypothetical set of circumstances, such as through reduction in upstream harvesting activities.

51. Applications of CVM to ecotourism in the market of developing countries illustrate the use of this technique. For example, a report on a survey of option and existence values conducted at Khao Yai Park in Thailand was based on this approach. In a CVM study of the viewing value of elephants in the Kenyan national parks, WTP for current levels of elephants in Kenyan parks was estimated. The value of ecotourism at a tropical rain forest site in Costa Rica was based on this approach. Another example from Costa Rica was a study that used a "take-it-or-leave-it" personal interview survey to establish WTP for the Monteverde Cloud Forest Preserve. 6/

2. Contingent ranking method (using relative instead of absolute values)

52. The contingent ranking method differs from other methods in that it does not ask respondents to place a monetary value on the environmental amenity itself. Instead, a range of amenities are ranked and then scored relative to each other, with one of the amenities serving as an "anchor". The respondents' WTP for the anchor is then elicited and used in inferring their WTP for the other amenities. The valuation of multi-purpose tree resources in Zimbabwe involves an excellent example of this technique. Zimbabwean smallholder farmers were asked to rank and score 10 categories of commodities obtained from trees. These non-monetary preferences were calibrated by simultaneously asking respondents to score a hand-pump borehole and a well-known type of pit latrine. Respondents were then asked for their WTP for the borehole and latrine in order to provide an "anchor" for use in inferring the value of the forest products and services.

53. The contingent ranking method has obvious merits in the context of evaluating alternative land-use options. However, it is important to bear in mind that due to its "indirect" approach, contingent ranking does not necessarily provide true estimates of WTP. Cross-checking of both contingent ranking and other CVM methods may be required in order to provide an indication of the reliability of the value estimates produced.

H. Cost-based valuation (what it would cost to provide the goods/service by other means)

54. A final set of valuation techniques for non-marketed goods and services can be grouped together under the heading of "cost-based valuation". These techniques assess the costs of different measures that would ensure the maintenance of the benefits provided by the environmental good or service that

is being valued. These cost estimates are then used as proxies for unknown environmental benefits.

1. Indirect opportunity cost (for example, labour cost of gathering fuelwood)

55. The indirect opportunity cost (IOC) method is used to calculate the value of non-market environmental goods when individual labour is involved in harvesting or collection. The basic assumption of this technique is that the decision to spend time in the collection and harvesting of, for example, NTFPs is weighed against alternative productive uses of labour. The use of the IOC method to value firewood gathered from the forest in Nepal has been described. Such a technique assumes that harvesting and collection of NTFPs generally require the expenditure of human effort with only minor investments in capital equipment. However in many cases it is almost impossible to assess how much labour is used for collecting NTFPs. For example, how often do farmers collect NTFPs on their way to a field? These "user cost-based techniques" suffer from the same deficiency - what something is worth has no necessary relationship to the costs involved to produce it. The fact that it is hard to estimate the users' cost to produce, for such joint products as NTFPs in the informal sector, makes this technique somewhat dubious.

2. Restoration cost (what it would cost to recreate the original ecosystem)

56. The restoration cost technique is based on the idea that given an alternative land-use option the non-marketed benefits provided by an intact ecosystem or the particular goods and services provided by such an ecosystem can be measured by estimating what it would cost to re-create the original ecosystem (or environmental good or service). The assumption is that by restoring the original ecosystem the original level of benefits will be restored.

57. In the case of primary forests, this method would involve costing the restoration of the original forest cover. Clearly, this is not something that, even with active intervention in silviculture and forest management, could be concluded quickly if it could be accomplished at all. Such considerations suggest that the technique is unlikely to prove useful.

3. Replacement cost (what it would cost to replace the good/service)

58. A perhaps more realistic method of re-creating non-marketed benefits consists in replacing specific natural ecosystem functions or assets with man-made production processes and capital, instead of relying on the restoration of the original ecosystem or function to provide the original level of benefits. This technique generates a value for the benefits of an environmental good or service by estimating the cost of replacing the benefits with an alternative good or service. It rests on the availability of such an alternative for the original good or service. The alternative should produce, as nearly as

possible, the same level of benefits supplied by the resource or environmental function being valued. 7/ This technique rests heavily on the assumption that replacing the original good or service is worthwhile, and that the benefits generated by the investment in replacement outweigh the costs of replacement.

4. Relocation cost (cost of moving people to where the original good/service still exists)

59. This technique involves estimating how much it would cost to relocate (and re-equip) communities in order that they might obtain a level of benefits in their new location similar to those derived at their original site. Instead of investigating the cost of bringing substitute benefits to populations in existing sites, this technique examines the potential for moving people to alternative locations where such benefits exist.

60. Application of the relocation cost technique to forests is typically restricted to a different purpose, namely, assessing the direct costs of establishing new protected areas that require the resettlement of forest-dwelling communities.

5. Preventive/defensive expenditure (what it would cost to prevent degradation)

61. A cost-based approach to estimating environmental benefits by examining preventive expenditures involves obtaining a figure for what it would cost to maintain environmental benefits by investing in the prevention of their degradation. For example, in the case of a selective harvesting regime, the watershed protection benefits that would be lost by building logging roads for the extraction of logs from the forest could be valued by examining what it would cost to select less damaging extraction techniques such as non-mechanized extraction or even extraction by helicopter.

62. In concluding this section, it is necessary to stress that no methodology provides a comprehensive answer, and this point is exemplified by a conservation project whose preparation used a combination of valuation methods to facilitate decision-making. The example 8/ was one of environmental valuation of a forestry development and conservation project in Madagascar. Its study contributed to raising awareness of the need for improved valuation methods for natural resource projects. It allowed some valuation methods to be adapted for use in economic analysis of a conservation project. To carry out the research, the following valuation methods were used: the contingent valuation method, recreation demand analysis (travel cost method), opportunity cost analysis and productivity analysis. This study has shown the potential of several valuation methods for improving the economic analysis of projects. However, as was noted by the authors, a study of this scope is impractical for every environmental or natural resource project. In fact, it is a project in itself.

III. CHOOSING THE ECONOMIC VALUATION TECHNIQUE/METHOD

63. All the techniques and methods presented above have fairly wide applicability. They cannot be prescribed a priori since the choice is dependent on many factors. However, any of them, used appropriately, should produce results that can be employed in a decision-making context. As already stressed above, the main use for monetary measures of forest values is as information on which to base comparisons of, and ultimately decisions on, proposed changes in forest management and use. However, the application of economic valuation techniques to the full range of forest benefits is an area that needs much more development. Certain recent studies illustrate the appropriate application of these techniques, but much more empirical work is required. In short, the following stages should be considered when choosing the economic valuation technique/method to be used.

64. The first stage in the evaluation process consists in defining clearly the overall objective or problem at hand. The type of economic assessment approach chosen will directly depend on the problem confronting the analyst. It is important to understand the decision-making context before moving on to the attempt to measure or estimate economic values. The values needed and the best way to estimate them will vary with the decision-making context.

65. After the appropriate economic assessment approach is identified, the next stage consists in defining the analysis and information required to conduct the assessment. The first step is to identify the area under consideration (whether an existing forest or possibly an area to be reforested or forested) the time-scale of the analysis, and the geographical and analytical boundaries of the system. It is also important to identify the various interest groups involved or affected by a proposed change and then define their own value perspectives that need to be taken into account in the decision-making process. These will obviously differ given the type of problem to be analysed. Once the analytical boundaries have been set, the economic values within these boundaries of relevance to the assessment need to be identified. It is therefore helpful to distinguish among different types of values: direct use, indirect use and non-use values. Identifying system and analytical boundaries, listing similar and conflicting values by interest groups and ranking them in terms of their importance to the assessment are all important steps in defining the information required for the analysis. As an example, consider the proposal to open a given forest area for logging. Some obvious interest groups would be the proposed loggers, the indigenous populations that live in the forest area, the county or province that owns the forest (and would thus gain revenue), various environmental groups, and the consumers of timber products, particularly if the increased logging resulted in lower prices for consumers.

66. The final stage involves carrying out the actual assessment itself. Priority should obviously be given to assessing those values that are more relevant to the decision-making requirements. Constraints on time, finances and skills will affect which goods and benefits can be valued and to what degree of accuracy. For example, a resource, function or characteristic may be given high importance initially, but other constraints may prevent its valuation.

67. Some guidelines exist for using economic value measures in practice. Gregersen and others (see note 1 below) suggest a general approach for the public sector that can be used in sorting out the values of different interested groups and their importance in different decision-making contexts.

68. As a final remark on difficulties encountered, it may be useful to refer to an example of estimating the total economic value (TEV) of forests. A study conducted in Mexico 9/ meant for this purpose showed an annual lower bound value of the services of Mexico's forests to be in the order of US$ 4 billion. TEV is an aggregate of direct-use value plus indirect-use value plus option value plus existence value. As such, this value encompasses benefits of Mexico's forests that accrue spatially (locally, nationally, regionally and internationally); so of this total value only a portion is likely to be "captured" within the country while most of it, for example, carbon cycling, will fall outside its borders. One of the conclusions of that study was that it had demonstrated that a strong case could be made for forest conservation in the Mexican instance, based on local, regional and global values of forests, and that those values should be incorporated into decisions on the future management of such an important resource. This leads once again to the question how the country can actually capture such values. As was pointed out in the study, valuation by itself is of little interest to a country owning environmental assets unless they can be turned into revenue flows. Thus, appropriate mechanisms need to be developed to capture the estimated economic values. These mechanisms need to be at the national and the international level.

69. There are many more case-studies. These studies suggest that such valuation techniques, with proper adaptations to a local context, can be useful in assessing resource value changes in the context of developing countries.

IV. ISSUES FOR FURTHER CONSIDERATION

70. This brief review suggests that (a) from a technical point of view, there exists a large body of techniques, methodologies and approaches for dealing with forest valuation, although some of them are too theoretical, and difficult to apply as well as time-consuming and costly; and (b) some experiences of the application of valuation techniques exist from which lessons can be drawn. One must also stress that the application of even the most traditional valuation methods relies heavily on the availability of better data, part of which should originate from the assessment of forest resources. It is critical that the information not be restricted to the forest sector: it should also be linked to other sectors that capture benefits generated by forests and woodlands.

71. However, a number of important considerations that go beyond technical aspects are brought to the attention of the Panel in terms of discussing this topic:

(a) Is the information provided by valuation efforts worth the use made of it in decision-making. In other words, it is necessary to ask whether elaborate valuation is able to influence decisions; otherwise it is a wasted effort;

(b) It should be noted that valuation always takes place in a context of power relationships among policy makers, society and various types of interest groups and communities. The power relationships determine whose perspective ultimately prevails in valuation;

(c) More detailed analysis is required for assessing the applicability and reliability of valuation in the key situations in which valuation is important that are probably more central to the concerns of the Panel such as (i) utilization or conservation of primary, unmanaged or any other types of forests, (ii) establishment of reserves for biological diversity, (iii) carbon sequestration and (iv) international watersheds, among others;

(d) Once value is demonstrated and incidence of such benefits is shown to be supranational, the political question, not a valuation issue, is whether - and if so how - to compensate those who suffer by making the value stay available, for example, with respect to areas under conservation that go beyond national and local needs;

(e) It is important to ensure that valuation is used as an objective analytical tool relative also to other sectors and to avoid "valuation for advocacy". The danger may exist that valuation is being applied selectively to forests for the purpose of advocacy rather than of neutral analysis relative to other uses of the lands with which forest-related uses are compared.

72. As was stressed in the introduction to this report, valuation is not a panacea in terms of stopping deforestation or forest degradation. It is a useful tool for providing information relating to a comparison of values (of those that would exist with a proposed change with those that would exist without one) and to the different ways different interest groups would be affected. The strength of valuation techniques lies in their ability to improve the understanding of the multiple goods and benefits of forests and the differences in the perceptions of and the importance given to, those goods and benefits by different interest groups. Their usefulness is determined by the existence of the political commitment to use the information generated for effective decision-making with a good understanding of the likely impacts. Even so, review shows that many of the detailed applications have been produced by researchers at a cost, both in time and in money, that would make such techniques of little use to managers having to make everyday decisions.

73. It is suggested that the Panel may wish to pay special attention to deciding if its interest is to be centred in (a) further work on valuation stricto sensu, which would imply that continuing efforts are justified by a demand for full valuation encompassing other dimensions than those incorporated in traditional methods in order to actually influence decisions. The Panel may wish to consider whether forest valuation theory and methodology are not ahead of actual applications. On the other hand, most valuation studies suffer from insufficient data and limited understanding of economy-environment interactions. The complexities of social systems and the valuation of social goods and services are seldom considered fully. If the Panel considers that there is scope for more work for improving valuation techniques, it may wish to indicate what emphasis it would like to see for research on alternative ways of bringing interested groups and stakeholders together and tools that allow people to

communicate what they value most and on work at national, regional and global level or in (b) the political issues raised once value is established, in other words, how to direct serious attention towards the outcome of valuation, its application and the implications for decision-making and for reconciling the concerns of the various interest groups or stakeholders. More specifically, the key challenge lies in developing policies and influencing behaviour on the basis of approaches that address the matter of the values forests provide, that meet the competing demands of interested groups and that provide a tool for analysis, and, ultimately, in making decisions and directing action in a coherent manner among major players and interest groups.

74. Including forest values within systems of national accounting is the next step to be addressed once agreement has been reached that it is feasible to derive credible, objective valuations that include all non-market goods and services.

Notes

1/ Official Records of the Economic and Social Council, 1995, Supplement No. 12 (E/1995/32), chap. I, annex I, sect. III, para. 1.

2/ For a more detailed and complete presentation of the subject of this report please see Gregersen and others, Valuing forests: context, issues and guidelines, FAO Forestry Paper, No. 127 (Rome, 1995). This paper was jointly sponsored by the World Bank, the United Nations Environment Programme (UNEP), a project of the United States Agency for International Development (USAID) and FAO.

3/ A. Grimes and others, "Valuing the rain forest: the economic value of non-timber forest products", Ambio, vol. 23, No. 7, pp. 405-410.

4/ The surrogate market valuation approach uses information about a marketed good or service to infer the value of a related, substitute or comparable non-marketed good or service under comparable conditions. For example, the value of fuelwood in a new market is estimated on the basis of the value of an alternative fuel, for example, kerosene, in that market, after adjusting for the calorific value of the two fuels.

5/ Carson (1991) provides an excellent overview of constructed markets.

6/ For a more general view of CVM as a method of valuing natural areas, see, for example, Valuing Natural Areas: Applications and Problems of the Contingent Valuation Method, Proceedings and related papers from a workshop held on 29 and 30 June 1992, M. Lockwood and T. DeLacy, eds. (New South Wales, Australia, Charles Stuart University, 1993).

7/ The difference between the replacement cost method and the substitute good method is that the latter rests simply on establishing the market price of a substitute. The replacement cost approach involves actually estimating what it would cost to replace a good or service.

8/ R. A. Kramer and others, Valuing Tropical Forests: Methodology and Case Study of Madagascar, World Bank Environment Paper, No. 13 (Washington, D.C., World Bank, 1995).

9/ W. N. Adger and others, "Total economic value of forests in Mexico", Ambio, vol. 24, No. 5, pp. 286-296.

Annex I

VALUES ASSOCIATED WITH CONTRIBUTIONS OF FORESTS TO HUMAN WELFARE

Direct use values associated with:

Consumptive uses:

Commercial/industrial market goods (fuel, timber, pulpwood, poles, fruits, animals, fodder, medicines, and so forth);

Indigenous non-market goods and services (fuel, animals, skins, poles, fruits, nuts, and so forth).

Non-consumptive uses:

Recreation (jungle cruises, wildlife photography, trekking, and so forth);

Science/education (forest studies of various kinds).

Indirect use values associated with:

Watershed protection (protection of downstream areas);

Soil protection/fertility improvements (maintenance of soil fertility, especially important in tropical regions);

Gas exchange and carbon storage (improvement of air quality, reduction of greenhouse gases);

Habitat and protection of biodiversity and species (potential drug sources, source of germplasm for future domesticated plants and animals);

Soil productivity on converted forest land (space and soil productivity for agricultural/horticultural crops and livestock).

Option and existence values:

People may value a forest or resource complex purely for its existence and without any intention to directly use the resource in the future. This includes intrinsic value;

People may value the option to use a forest in the future, or merely the option to have it available in the future. Although such values are difficult to measure in economic terms, they should be recognized in valuing the contributions of forests to human welfare.

Note that any of the above values can be considered at different scales, for example, catchment, forest, watershed, regional, national, global.

Source: Gregersen and others, Valuing Forests: Context, Issues and Guidelines, FAO Forestry Paper, No. 127 (Rome, 1995).

Annex II

ADVANTAGES AND DISADVANTAGES OF VALUATION TECHNIQUES IN FOREST LAND-USE APPRAISAL

Valuation technique	Advantages	Disadvantages
Market prices		
Use prevailing prices for goods and services traded in domestic or international markets	Market prices reflect the private willingness to pay for costs and benefits of forest land-use options that are traded (for example, timber, fuelwood, food, medicines, utensils, recreation). They may be used to construct financial accounts to compare alternative land-use options from the perspective of the individual or the firm concerned with private profits and losses. Price data are relatively easy to obtain	Market imperfections and/or policy failures may distort market prices which will therefore fail to reflect the economic value of goods or services to society as a whole. Seasonal variations and other effects on prices need to be considered when market prices are used in economic analysis.
Efficiency (shadow) prices		
Use market prices but adjust for transfer payments, market imperfections and policy distortions. May also incorporate distribution weights, where equity concerns are made explicit. Shadow prices may also be calculated for non-marketed goods	Efficiency prices reflect the true economic value, or opportunity cost, to society as a whole, of goods and services that are traded in domestic or international markets (for example, timber, fuelwood, food, medicine, utensils, recreation)	Derivation of efficiency prices is complex and may require substantial data. Apparently "artificial" prices may not be accepted by decision makers
Hedonic pricing method		
The value of an environmental amenity is imputed from property or labour markets. The basic assumption is that the observed property value (or wage) reflects a stream of net benefits (or working conditions) and that it is possible to isolate the value of the relevant environmental amenity or attribute	Hedonic pricing may have potential for valuing certain tropical forest functions (for example, microclimate regulation, groundwater recharge) in terms of their impact on agricultural land values, assuming that the link between forest functions and agricultural productivity is widely known and fully reflected in agricultural land prices	Application of hedonic pricing to the environmental functions of tropical forests requires that these values be reflected in surrogate markets. The approach may be limited where markets are distorted, choices are constrained by income, information about environmental conditions is not widespread and data are scarce

Valuation technique	Advantages	Disadvantages
Travel cost method		
The travel cost approach derives willingness to pay for environmental benefits at specific locations by using information on the amount of money and time that people spend to visit the location	Widely used to estimate the value of recreational sites, including public parks and wildlife reserves. It has been used to estimate willingness to pay for ecotourism to tropical forest areas in some developing countries	Data-intensive; restrictive assumptions about consumer behaviour (for example, trip multifunctionality); results highly sensitive to statistical methods used to specify the demand relationship
Production function approach		
Estimates the value of a non-marketed resource or ecological function in terms of changes in economic activity, by modelling the physical contribution of the resource or function to economic output	Widely used to estimate the impact of deforestation, soil erosion, wetlands and reef destruction, air and water pollution and so forth on productivity activities such as crop cultivation, fishing, hunting and so on	Requires explicit modelling of the "dose-response" relationship between the resource or function being valued and some economic output. Application of the approach is most straightforward in the case of single use systems but becomes more complicated with multiple use systems. Problems may arise from misspecification of the ecological-economic relationship or double counting
Related good approaches		
Uses information about the relationship between a non-marketed good or service and a marketed product to infer value. The barter exchange approach relies on actual exchange of non-marketed goods for marketed goods. The direct substitute approach simply assumes that a marketed good can substitute for a non-marketed good. The indirect substitute approach also relies on a substitute good but if the latter is not exchanged in markets its value is inferred in terms of a change in economic output (in other words, using the direct substitute approach combined with the production function approach)	These approaches may provide a rough indicator of economic value, subject to data constraints and the degree of similarity or substitution between related goods	The barter exchange approach requires information on the "rate of exchange" between two goods. The direct substitute approach requires information on the degree of substitution between two goods. The indirect substitute approach requires information on the degree of substitution and on the contribution of the substitute good to economic output

Valuation technique	Advantages	Disadvantages
Constructed market techniques		
Measure WTP and WTA by directly eliciting consumer preferences	Directly estimates Hicksian welfare measure; provides best theoretical measure of WTP	Practical limitations of constructed market techniques may detract from theoretical advantages leading to poor estimates of true WTP
Simulated market (SM): constructs an experimental market in which money actually changes hands	SM: controlled experimental setting permits close study of factors determining preferences	SM: sophisticated design and implementation may limit application in developing countries
Contingent valuation method (CVM): constructs a hypothetical market to elicit respondents' WTP	CVM: only method that can measure option and existence values and provide a true measure of total economic value	CVM: results sensitive to numerous sources of bias in survey design and implementation
Contingent ranking (CR): ranks and scores relative preferences for amenities in qualitative rather than monetary terms	CR: generates value estimate for a range of products and services without having to elicit WTP for each	CR: does not elicit WTP directly, hence lacks theoretical advantage of other approaches
Cost-based valuation		
Based on the assumption that the cost of maintaining an environmental benefit is a reasonable estimate of its value. To estimate WTP:	In general, it is easier to measure the costs of producing benefits than the benefits themselves, when costs comprise traded goods and services and benefits are non-marketed. Hence cost-based approaches are less intensive in terms of data and resource requirements	
Indirect opportunity cost method (IOC) uses wages forgone by labour in production of non-marketed goods	IOC: useful in evaluating subsistence benefits where harvesting and collecting time is a major input	
Restoration cost method (RSC) uses the cost of restoring ecosystems or goods and services	RSC: potentially useful in valuing particular environmental functions	
Replacement cost method (RPC) uses the cost of artificial substitutes for environmental goods and services	RPC: useful in estimating indirect use benefits when ecological data are not available for estimating damage functions with first-best methods	
Relocation costs method (RLC) uses the cost of relocating threatened communities	RLC: only useful in valuing environmental amenities in the face of mass dislocation such as dam projects and establishment of protect areas	

Valuation technique	Advantages	Disadvantages
Preventive expenditure approach (PE) uses the cost of preventing damage or degradation of environmental benefits	PE: useful in estimating indirect use benefits when prevention technologies are available	
Damage costs avoided approach (DC) relies on the assumption that damage estimates are a measure of value. It is not a cost-based approach, as it relies on the use of the valuation methods described above	DC: first-best methods to estimate damage costs are useful for comparison with cost-based approaches, which implicitly assume damage is worth avoiding	

Source: International Institute for Environment and Development (IIED), 1994.

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IMPLEMENTATION OF FOREST-RELATED DECISIONS OF THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT AT THE NATIONAL AND INTERNATIONAL LEVELS, INCLUDING AN EXAMINATION OF SECTORAL AND CROSS-SECTORAL LINKAGES

Programme element I.1: Progress in national forest and land-use plans

Report of the Secretary-General

SUMMARY

As requested by the Ad Hoc Intergovernmental Panel on Forests at its first session (see E/CN.17/IPF/1995/3, para. 11), the present report has been prepared for initial discussion of element I.1 of the programme of work of the Panel, "Progress in national forest and land-use plans". The report contains a general overview of programme element I.1; describes the planning context for national forestry programmes; reviews the achievements and lessons learned; mentions the activities planned in preparation for substantive discussion at the third session of the Panel; makes suggestions for discussion of programme element I.1 at the second session; and provides alternatives for action and suggested items for discussion by the Panel, including a list of 12 basic features of national forestry programmes, which is contained in the annex.

Within the context of sustainable development and environmental conservation, trees, forests and forestry have been ascribed a renewed and enhanced role. In most countries, forestry is undergoing radical and complex changes, including:

(a) Balancing increasing and more diversified demands on forest lands and resources with the need to conserve forest ecosystems;

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(b) Integrating all stakeholders, including local communities, community-based organizations, non-governmental organizations and the private sector in the decision-making process and in implementation;

(c) Adapting to a new balance between the roles of government institutions and the private sector, and of central versus regional and local institutions;

(d) Participating actively in the resolution of cross-sectoral issues, particularly issues affecting land use, poverty, food security, energy needs and environmental protection.

Significant progress has been made during the last five years at the planning and policy levels. However, strategies must often undergo a prolonged sequence of activities: first diagnosis, then planning, finally implementation. Indeed, in many cases implementation has not yet started or is failing, so that forest-sector activities continue as before on unsustainable paths.

In developing countries, sectoral planning in forestry began nearly three decades ago. It was initiated with external assistance to help national planning authorities to assess forestry conditions and formulate long-term strategies, primarily in relation to forest industries. Since the 1960s, the scope of forestry-sector planning has greatly expanded, as mentioned above. One of the strongest justifications for long-term sectoral planning was that it was a way to establish a basis for reforming forest policies. Forestry is currently addressed in several sectoral-level planning frameworks that have international backing.

At present, 54 developing countries are implementing national forestry programmes, and another 26 countries are engaged in planning processes. In addition, three Mediterranean countries and three countries from Eastern Europe are starting planning processes.

The analysis of the situation in the different countries embarked on national forestry programme processes shows that much progress has been made in many countries in the areas of new forestry policies; new legislation; institutional reorganization; redefinition of the role of the State; decentralization of forest-management responsibilities; transfer of responsibility to communities and local groups; transparency of debates and participation in the decision-making process; and coordination and harmonization of actions within coherent, holistic and intersectoral strategic frameworks.

The viability of these national forestry programmes is based on the capacity of countries to commit themselves to policy and institutional reform, as well as on the capacity of the international community to respond fully and in a coordinated manner to their request for external assistance. The most important objective of sector planning is to facilitate a national discussion on the desired directions for change. Reaching consensus may take two or three years, but the consultative and acceptance processes are at least as

essential as the technical analysis process: if planning is conducted by external consultants in a manner not conducive to a continuing process, national forestry programmes stand little chance of being implemented.

Concerning policy reform and intersectoral coordination, two key constraints have been identified:

(a) Slow pace of policy and institutional reforms within the sector: in many countries, the lack of progress and transparency of policy and institutional reform processes has become the most important constraint to the implementation of forestry-sector plans and programmes.

(b) Lack of intersectoral coordination: policies and policy instruments related to land-use planning and land husbandry are still not coordinated and working towards the common goal of sustainable development. Effective high-level mechanisms for intersectoral coordination are more the exception than the rule.

In industrialized countries, perspectives on forests and the perception of their importance in urbanized societies are changing rapidly and may clash with traditional forestry cultures. Competing ideas about the question "Trees and forests, for whom and for what?" have greatly increased in both variety and intensity. An increasing number of individuals and institutions contend that the historical primacy of timber production for industries must be replaced by a new forestry guided by ecologically sustainable development.

Planning is further complicated in countries attempting to make the transition to a new agenda in forestry. The components of this transition can be defined in a number of different ways but usually include enhanced efforts in the following areas: (a) environmental management and social forestry, (b) facilitation rather than control, (c) decentralized and participatory management, and (d) greater attention to markets and prices. The extent to which these emphases are actually internalized in forestry agencies is an open question.

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INTRODUCTION

1. Element I.1 of the programme of work of the Ad Hoc Intergovernmental Panel on Forests is guided by the decisions taken by the Commission on Sustainable Development at its third session and further elaborated by the Panel at its first session.

2. The Commission defined programme element I.1 as a need to consider actions to promote progress in implementing the Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forest (Forest Principles), 1/ as well as chapter 11 and other forest-related chapters of Agenda 21, 2/ by means of national forest and land-use plans and programmes in an open, transparent and participatory process involving Governments and all interested parties, including major groups, particularly indigenous people and local communities.

3. At its first session, the Panel emphasized that preparatory work on programme element I.1 should be based on the provisions of the Forest Principles, and would benefit from consideration of regional initiatives and regional dimensions. Such work should include the preparation of a report on all types of forests, reviewing current approaches to national strategies and noting links between national forest plans and sustainable development strategies/plans, land-use plans, including ecosystems management, and sectoral plans; the report should also contain a synthesis of lessons learned, including lessons learned from participatory forest management approaches at the national and field levels. Preparatory work should also include a report assessing progress made in implementing national forest and integrated land-use plans; should identify gaps in need of further attention; and should focus on improved cooperation and implementation by national Governments of bilateral and multilateral forest-related planning activities and programmes, and on the use of national-level participatory approaches to that end. The Panel decided to schedule programme element I.1 for initial discussion at the current session and substantive discussion at the third session, in September 1996.

4. The present report was prepared by the Food and Agriculture Organization of the United Nations (FAO), as lead agency for programme element I.1, in consultation with the secretariat of the Panel in the Division for Sustainable Development, Department for Policy Coordination and Sustainable Development of the United Nations Secretariat. Contributions were also received from the Global Forestry Policy Project, the International Academy of Environment, the International Centre for Forestry Research (CIFOR), the United Nations Development Programme (UNDP), the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), the Ministry of Cooperation of the Government of France and the World Bank. Other major sources of information included North Carolina State University, the International Union for the Conservation of Nature and Natural Resources (IUCN), the International Institute for Environment and Development (IIED), the World Resources Institute (WRI), the World Wide Fund for Nature (WWF) and the Asian Development Bank.

5. In the present report, the words "forest" and "forestry" are used in their broadest sense. The term "forest" encompasses all components of the forest

ecosystem, including woodlots and trees in rural environments. The term "forestry" refers to all forest and forest-related activities, including everything to do with the growing, harvesting and processing of forest vegetation, whether for wood (including fuelwood) or non-wood products, as well as forest ecosystems management, the conservation of flora and fauna found in the forests, the protection of forests, landscapes and heritage site, watershed management, soil conservation, forest-based tourism and national parks. Forestry is concerned with human beings, especially people living in and around forests; therefore "forestry planning" and "national forestry programmes/plans" are used here to denote not only the forests themselves but also people concerned with forests and their activities.

6. The Convention on Biological Diversity, 3/ the United Nations Framework Convention on Climate Change (A/AC.237/18 (Part II)/Add.1 and Corr.1, annex I), the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa (A/49/84/Add.2, annex, appendix II) and the Forest Principles, as well as current initiatives for the formulation of criteria and indicators for sustainable forest management, all focus on an increased and expanded role for forestry and emphasize the need for improved planning in forestry.

7. The present report analyses the planning context, planning performance and strategic planning proposals for injecting new vitality into the implementation process and accelerating progress. Although its subject concerns all countries of the world, the report provides more information on the developing countries than on the countries in transition and the developed countries; an ongoing survey and analysis will correct this deficiency in the next report to the Panel on programme element I.1.

I. THE PLANNING CONTEXT

A. Forestry planning since the 1790s

8. Strategic planning in forestry is not a new concept. For several hundred years, States and communities have elaborated policies, legislation and strategies in order to control the utilization of the products of forest lands, protect existing forests and restore degraded ones. Many such strategies failed because they were overcome by larger events, such as war, colonization, revolution and land reform.

9. The development of modern planned forestry practices in Western Europe can be traced to the late 1700s, a time of rapid population growth, expanding urbanization, explosive scientific discovery and increasing confidence in mankind's ability to master nature. The scope of forestry-sector planning in the industrial world has expanded gradually to embrace deforestation, the loss of biodiversity, food security, the inability of national forestry administrations to enforce laws and regulations, and institutional contradictions across sectors and strategies. Forestry planning in developing countries has evolved very rapidly to confront the same issues; the perspectives presented in table 1 are common to poor and rich countries alike, despite their vastly different situations.

Table 1. Perspectives on forests and forestry in the 1790s and 1990s

1790s	1990s
Commodities for industrial development are scarce	Natural habitats are scarce after two centuries of industrial development
Forest outputs are timber, game, fuelwood and water	Outputs are many, including complex ecosystem services and ethical and recreational values
Viewpoint: the natural world can be easily managed and controlled	Viewpoint: the profound human impact on the natural world is very difficult to understand or control
Forest-dependent communities are local villages and farms	Communities are local, regional, national and global
Management aims to produce commodities	Management aims to adapt to changing circumstances and preserve future options
Management seeks to sustain harvest yields	Management seeks to sustain the holistic status and health of the forest as a complex ecosystem
Laissez-faire: property owners do as they like with their forests and land	Authorities impose increasing restrictions on property rights in the interest of serving the public good
Foresters have faith in the promise of science and technology to rationalize forestry practices	Foresters apply science and technology, but it is questionable whether they rationalize forestry practices
The forester is an expert and a decision maker	The public is the decision maker acting through democratic processes; the forester is a technical adviser

Source: J. G. Laarman, "Forestry planning: new challenges after two centuries", paper presented at a workshop on forestry-sector planning (Anchorage, Alaska, 18-22 September 1994); the workshop was jointly organized by FAO and the Canadian Forestry Service.

B. Definitions and types of planning

10. In broad terms, planning in forestry should (a) facilitate the articulation of attitudes, values and expectations regarding forestry in the broadest sense; (b) raise questions about the information required to protect and manage trees and forests; (c) define strategies to resolve conflicts or potential conflicts

in forest use; and (d) specify the inputs and resources needed by programmes to move in the directions indicated by planning. Forest-sector, land-use and forest-management planning may be described as follows:

(a) Forestry-sector planning covers all the linkages between a country's forests (or total tree cover) and the aggregate of its human institutions. The forestry sector is defined in relation to owners, managers and users of trees and forests. Context is critical, because the boundaries of forest ownership, management, and use vary from local to global. Sectoral planning in forestry considers the different ways in which owners, managers and users will gain or lose under alternative options for forest protection and management;

(b) Land-use planning deals with the nature and value of land, and how the latter determine its suitability for different purposes. Land-use planning occurs at different levels and scales, from continental to local. Planning indicates the advantages and disadvantages of imposing a specific use on a particular unit of land from physical, economic and social standpoints;

(c) Forest-management planning aims to identify and choose among alternative production and use combinations for specific forest units and aggregations, which are defined by physical, legal or ecosystem boundaries. The planning scope is defined by the resources and decision authority under the control of the manager, which can be an individual or an entire organization, depending on the context.

II. STRATEGIC PLANNING PERFORMANCE: OBSERVATIONS AND LESSONS

11. The earliest forestry planning in the 1700s was largely a technical exercise of estimating forest growth rates and computing allowable cuts. Today's context is totally different, encompassing not only alternative production possibilities but also implications for social welfare; two key priorities are public participation and sustainability. The success of forestry planning in meeting the contemporary demands placed on it is considered here in two different contexts: (a) sector planning in developing countries; and (b) forest-management planning in industrialized countries.

A. Forestry sector planning in developing countries

1. Planning frameworks

12. In developing countries, sectoral planning in forestry began nearly three decades ago. It was initiated with external assistance to help national planning authorities assess forestry conditions and formulate long-term strategies, primarily in relation to forest industries. Since the 1960s, the scope of forestry-sector planning has greatly expanded, as mentioned above. One of the strongest justifications for long-term sectoral planning was that it was a way to establish a basis for reforming forest policies. At present, forestry is addressed in several sectoral-level planning frameworks that have international backing, as follows:

(a) Master plans for forestry development (MPFD): they date from the Finnish experience in the 1960s, followed by similar planning experience in Chile, Nigeria and other countries in the 1970s. The early MPFDs were industrial in outlook. Recent master planning in Asian countries has attempted to become broader in scope and philosophy. In 1992, there was agreement at a national forestry action programmes (NFAP)/MPFD coordinator meeting in Indonesia that MPFDs and NFAPs would follow the same principles and operational guidelines;

(b) Tropical Forests Action Plan (Programme) (TFAP): launched in 1985, the initial goal of TFAP was to curb tropical deforestation while meeting local and national forest-related needs. Since its revision in 1991, TFAP has become essentially a framework for strategic planning in forestry through the launching of NFAPs, as well as an entry point for raising awareness on forest-related issues, preparing or updating forest policies, preparing specific action programmes and projects, and stimulating financial and political support to implement such initiatives;

(c) World Bank forestry sector reviews (FSRs): like the MPFD approach in the 1970s, FSRs were considered part of TFAP from 1985 to 1990. Today they are often integrated into rural development strategies;

(d) National environmental action plans (NEAPs): introduced in 1987 by the World Bank, NEAPs focus mainly on least developed countries. The scope of NEAPs covers all environmental issues in addition to forests and forestry. The intent is to lay out a comprehensive strategy to deal with environmental management and provide a specific plan for action. NEAPs do not generally include all aspects of forestry;

(e) Other planning frameworks: first proposed in 1980, national conservation strategies have been put forward through the joint efforts of UCN, WWP and UNDP. UNCED also called for the preparation of national sustainable development strategies.

13. These planning exercises are often pursued separately, although they have much in common: each emphasizes the integration of sectoral planning with national-level planning; each aims to strengthen legal systems and institutions as a requirement for improved policy-making; each promotes multisectoral and multidisciplinary planning to better formulate coordinated programmes and projects; each advocates the use of planning as a means of building national consensus on broad goals and programme directions; and finally, each stresses public and non-governmental organizations' participation in the planning process. The differences that remain are mainly differences of scope and institutional composition.

14. The presence of multiple planning frameworks raises questions about achieving planning coordination. The ideal is complementarity; as stated in one of the NFAP operating principles, by complementing and reinforcing existing and planned national and international initiatives, NFAPs will contribute to effective, comprehensive and coordinated action.

15. Many Governments, however, have started different planning frameworks for the environment and natural resources at different times or simultaneously. Multiple frameworks generate confusion at both political and administrative levels about which frameworks prevail over others; often compete for the small pool of highly qualified national personnel available to direct and implement the planning exercises; and raise expectations about sectoral planning that are not achievable except through persistent commitment at the national and international levels.

Box 1. National forestry planning processes

Many names are utilized to designate national forestry processes, such as "forestry master plan", "national forestry action programme or plan", "national forestry development plan", "forestry agenda" and "forestry programme framework". In addition, multisectoral strategies for environment and strategies for natural resources management have promoted "national conservation strategies", "national environmental action plans", "green plans", "national natural resources management programmes", "programmes de gestion des terroirs villageois", "national plans to combat desertification" and "integrated Conservation and development Programmes". All these multisectoral strategies include some but generally not all forestry components.

The many frameworks supported by international governmental or non-governmental organizations create confusion and overlap, waste energy and money, and often do not improve institutional conflicts at either the national or international levels.

Curtailing this proliferation of planning frameworks should be one of the main objectives of the international community. Although it is the responsibility of each country to integrate all plans and programmes in one unified national plan/programme, it is also the obligation of the international community to coordinate efforts rather than follow its own objectives and priorities without consultation and collaboration. Several developing countries have recently succeeded in integrating or internalizing all such plans and programmes; this type of evolution must be encouraged and a national forestry programme suited to the needs of each country must be promoted and supported.

Box 2. Improving planning frameworks

The shortcomings of some planning efforts are well known. Many national strategies, plans and programmes have been prepared by foreign consultants with minimal national participation. One of the main early criticisms of TFAP concerned the insufficient participation of the people whose livelihoods depend on forests, in particular indigenous people. Other criticisms include the following:

(a) TFAP focused heavily on industrial utilization and plantation development to the detriment of other objectives, such as the management of protected areas;

(b) Its top-down approach failed to stimulate a consultative and interactive dialogue on issues;

(c) It did not pay sufficient attention to the macroeconomic and sectoral policies that contribute to deforestation and forest degradation.

These and related concerns have prompted adjustments to make planning frameworks more country-driven and process-oriented, rather than donor-driven and project-oriented. Other adjustments in goals and objectives include increased emphasis on (a) participatory planning and implementation, (b) multidisciplinary and multisectoral depth and breadth, (c) policy reforms both inside and outside forestry sectors, (d) forest protection and sustainability, (e) coordinating with other planning and policy initiatives, and (f) strengthening the institutional setting in which forestry operates.

All these adjustments are well reflected in various recommended principles and guidelines that have been developed by a wide range of institutions, including FAO, UNDP, the World Bank, regional development banks, IUCN, IIED and WRI.

2. Actual situation of national planning processes

16. The NFAP Update, published by the FAO Forestry Department, reports on all national-level strategic planning processes for the forestry sector, regardless of title or framework followed. The July 1995 issue covers 98 countries, including two from Eastern Europe and two from the Mediterranean. NEAPs and other national conservation strategies are not considered separately but are analysed in relation to forestry planning.

17. An overview of the progress made by these countries in the elaboration and implementation of national forestry programmes is provided in table 2; it should be noted that 15 of the countries implementing national forestry programmes are now in the process of revising their initial programmes and formulating revised action plans.

Table 2. Status of national forestry programmes processes in developing countries and countries in transition, by region, 1996

Status in 1996	Number of countries per region				
	Africa	Asia and the Pacific	Latin America/ Caribbean	Mediterranean countries	Eastern Europe and CIS a/
Formulated before UNCED: in revision process	4	5	6	0	0
Formulated before UNCED: in implementation	5	5	5	0	0
Formulated since UNCED: in implementation	3	1	12	0	0
Formulated since UNCED: ready to be implemented	4	3	1	0	0
Subtotal (formulated)	16	14	24	0	0
Planning process under way	6	4	2	0	0
Planning process initial stage	7	6	1	3	3
Subtotal (in planning process)	13	10	3	3	3
Subtotal (process ongoing)	29	24	27	3	3
Process stopped at implementation phase b/	4	0	3	0	0
Process stopped at planning phase b/	5	0	2	0	0
Subtotal (process stopped)	9	0	5	0	0
Process not yet started	10	1	2	14	18
Total countries	48	25	34	17	21

a/ Commonwealth of Independent States.

b/ Political instability and discontinuity, wars and local conflicts are the major causes of the interruption of planning and implementation processes.

3. Achievements

18. At present, 54 developing countries are implementing national forestry programmes, and another 26 countries are engaged in planning processes. In addition, 3 Mediterranean countries and 3 countries from Eastern Europe and the Commonwealth of Independent States (CIS) are starting planning processes.

19. The analysis of the situation in the different countries embarked on national forestry programme processes shows that much progress has been made in many countries regarding new forestry policies; new legislation; institutional reorganization; the redefinition of the role of the State; the decentralization of forest-management responsibilities; the transfer of responsibility to communities and local groups; the transparency of debates and participation in the decision-making process; and the coordination and harmonization of actions within coherent, holistic and intersectoral strategic frameworks.

20. National forestry programmes have permitted countries to advance towards medium and long-term planning in the forestry sector. Many countries have identified the main forestry problems and their effects, as well as the sector's opportunities and the constraints hindering its development, the main actors and their responsibilities, and the options for the sector to contribute to regional and national development.

21. In many countries, there have been positive effects on national planning, such as the integration of forestry in national sustainable development plans; the upgrading of forestry institutions; the creation of environmental committees or commissions; the promulgation of laws strengthening forest and environmental management; and the implementation of important projects. There has also been some positive impact on the mobilization of national and international financial resources for the sector (see E/CN.17/IPF/1996/5).

22. The viability of these national forestry programmes is based on the capacity of countries to commit themselves to policy and institutional reforms, and the capacity of the international community to respond fully and in a coordinated manner to their request for external assistance. The most important objective of sector planning is to facilitate a national discussion on the desired directions for change. Reaching consensus may take two or three years, and the consultative and acceptance process are at least as essential as the technical analysis. If planning is conducted by external consultants in a manner not conducive to a continuing process, national forestry programmes stand little chance of being implemented.

4. Constraints and weaknesses

23. The key constraints to the effective and efficient implementation of national forestry programmes have been reviewed in several studies.

(a) Policy reform and intersectoral coordination

24. Two key constraints have been identified:

(a) Slow pace of policy and institutional reforms within the sector: in many countries, the lack of progress and transparency in the policy and institutional reform processes has become the most important constraint to the implementation of forestry-sector plans and programmes;

(b) Lack of intersectoral coordination: policies and policy instruments related to land-use planning and land husbandry are still not coordinated and working towards the common goal of sustainable development. Effective high-level mechanisms for intersectoral coordination are more the exception than the rule (see box 3).

25. These constraints, which in many countries are becoming the biggest hindrance to the effectiveness of forestry action plans and programmes, including international financing, are symptoms of a more fundamental problem that is often labelled a lack of political commitment, reflecting conflicts of interest between various interest groups and between national and international priorities. The sources of such constraints are essentially political: land tenure and use is a divisive issue, related to regional, ethnic, cultural and social conflicts of interest, among others. In addition, the political realities of many countries, such as the need to balance the budget or to satisfy the demands of certain key constituencies, make Governments forgo long-term benefits for short-term gains, regardless of their social and environmental consequences.

26. In many developing countries, forests are cleared to relieve the demographic pressure on existing agricultural land. Deforestation is therefore closely related to how the use of the national land resources of the country is organized (see E/CN.17/IPF/1996/2). It is naive to believe that a programme dealing with a marginal sector like forestry, often representing only a few per cent of the gross domestic product (GDP), can have a major impact on such macrolevel issues. The most effective policy measures related to deforestation usually fall outside the forestry sector and concern population and human development policies, land distribution and tenure, industrial development, trade etc.

27. If a national forestry programme is to have an impact on the above-mentioned constraints, it needs to be adopted as an important instrument at the highest political level, and must be linked to a broader and higher-level development planning exercise. Politicians must be involved in its formulation; politically compelling arguments for forest conservation and sustainable forestry development must be found; and a critical mass of well-informed and motivated key decision makers committed to the plan or programme must be created. Experience in many countries indicates that politicians are receptive to such instruments, particularly in areas where concerns about the environment and forests are becoming widely recognized. In addition, the role of the media is essential in raising awareness.

Box 3. National forestry planning and national land-use planning

Forests are only one among many options for the use of land. A dynamic situation exists regarding the relative importance of land uses in the world. In developing countries, 720 million hectares (ha) of land are under crops (29 per cent of the total area suitable for agriculture); by the year 2010, that figure is expected to increase to 850 million ha, a gain of 130 million ha, with much of the additional area to come from land now covered with forests. In developed countries, the situation is the opposite. Efforts are now under way (for example, in the European Union) to reduce agricultural surpluses by releasing land from farming. Returning such land to forestry is among the options being considered.

Sustainable forest management needs to be practised within the framework of an effective land-use planning process that defines the place of trees and forests in overall land use within a dynamic context.

The objective of chapter 10 of Agenda 21 is to facilitate the allocation of land to the uses that provide the greatest sustainable benefits, and to promote the transition to a sustainable and integrated management of land resources. To that end, environmental, social and economic issues should be considered, in particular the rights of individuals and groups, such as indigenous people and women.

However, as previously stated in the report of the Secretary-General on an integrated approach to the planning and management of land resources (E/CN.17/1995/2), there is still a lack of sufficiently detailed information on land resources at the national level. As a result, very few countries have developed national land-use policies and plans, and there is still little development of the procedures and institutional structures necessary to enable integrated and logical action.

In the absence of national land-use policies and plans, each sector tries to develop its own strategy, thus creating the greatest constraint to the development of a more productive and sustainable use of land, which is precisely this fragmented and sector-oriented approach to the matching of land resources and human needs.

(b) Planning and implementation strategies

28. The major weaknesses in the planning and implementation of forestry development at the national level include:

(a) Prevalence of top-down planning and implementation: despite a common understanding that successful forestry interventions are demand-driven (i.e., based on local problems, priorities, resources, knowledge and traditions), too little has been achieved in making bottom-up planning and

implementation concepts operational. At the project level, grass-roots participation is increasingly applied, but such experience has not been effectively transferred to the national level;

(b) Lack of clearly defined priorities for implementation: many forestry action plans and programmes remain long shopping lists of projects without clearly defined priorities among or within the various development programmes. Linkages between programmes and programme components are not recognized;

(c) Lack of national capacity: national capacity for the planning and implementation of forestry programmes is not adequate for the sustainability of the proposed policy and institutional reforms and development programmes.

(c) Funding and coordination with and between donors

29. The funding and coordination of sources - private and public, domestic and international - are obviously critical concepts for national forestry programmes (for detailed consideration of these issues, see E/CN.17/IPF/1996/5). Project funding often does not result in comprehensive effective programmes and progress towards national development objectives. The World Bank and other development banks have suggested adopting a broad sectoral approach to investment funding. A sector investment programme would be based on a sector strategy such as a national forestry programme. This would help avoid shifting priorities, and would ensure mutual understanding of objectives, commitments and responsibilities. It would also improve inter-agency cooperation and coordination.

30. Based on the principles of the broad sector approach UNDP has developed a concept of forest partnership agreements between a country and donor community to coalesce national commitments and donor support for national forestry programmes. Such programmes would focus on countries with a strong national commitment to control deforestation, and would also target the underlying causes of deforestation.

B. Forestry planning in industrialized countries

31. In industrialized countries, perspectives on forests and the perception of their importance in urbanized societies are changing rapidly and may clash with traditional forestry cultures. Competing ideas regarding the question "Trees and forests, for whom and for what?" have greatly increased in both variety and intensity. An increasing number of individuals and institutions contend that the historical primacy of timber production for industries must be replaced by a new forestry guided by ecologically sustainable development.

32. The proposed reform of forestry concepts gives priority to an ecosystems approach, nature conservation, the maintenance of biodiversity and non-timber amenities, and also raises questions about public control over private forests. But although social perceptions about forests and forestry have been changing rapidly, planning and practices on the part of forest owners, including Governments, have been slower to adjust, which partly explains the serious criticisms that now seem to paralyse various public forestry agencies.

Table 3. Difficulties encountered in planning the national forests of developed countries

Issue	Consequences
Planning relies on a complex computer model.	Forest plans are so technical that opportunities for public participation are limited. Only a few experts can understand the technical trade-offs. The planning model does not adequately capture the aesthetic and spiritual values often very important to citizens.
Planning compares alternative output combinations but avoids discussing practices (e.g., clear-cutting).	Key policy issues are omitted from the planning framework.
Plans are presented in long reports, bureaucratic language and many large data tables.	Reports frustrate attempts to understand the substance of the issues.
Planners use passive and selective approaches to solicit public participation (mainly of local and regional commodity interests).	The approach omits wider conservation and environmental interests, which later respond with criticisms.
Public participation is invited, if at all, only at a late stage in the planning process.	This makes the plan vulnerable to unanticipated objections when it is finally released to the public.
Planning relies mainly on one-way communications; it does not seek interactive discussion.	Outside interests develop their own vision of what forest plans should include, without consulting with the forest service.
Contentious issues are obscured in plans in an attempt to avoid confrontation.	Failure to explicitly recognize disputes results in plans being contested in the courts.

Source: Same as table 1, adapted from C. V. Barber, N. C. Johnson and E. Hafild, Breaking the Logjam: Obstacles to Forest Policy Reform in Indonesia and the United States (Washington, D.C., World Resources Institute, 1994).

33. In principle, planning for publicly owned forests takes place in a shared-power setting of different stakeholders who legitimately claim and defend different interests. Planning is expected to mediate among these diverse interests by choosing among different forest management options.

34. However, current planning frameworks do not necessarily achieve this. The cases of national forests in the United States of America and in France are instructive, because they illustrate that forest management plans may be sharply criticized even after substantial technical/scientific efforts have been devoted to planning. As indicated in table 3, such problems are mainly institutional in nature. Planning may produce results that are not transparent to the public or even to foresters; the situation may be further exacerbated by the release of written plans that are long, complex and difficult to understand.

C. Lessons learned

1. Key features for planning

35. The preceding performance review in two different contexts of forestry planning suggests a number of lessons common to both developing and industrialized countries, the most important being:

(a) Planning is vision: success in planning requires the establishment of a shared vision of the future and the creation of the will and capacity to move towards that vision;

(b) Planning is a participatory process: virtually all observers of the subject believe that planning works best when it is participatory from beginning to end. Interaction must be deliberately created and facilitated, not left to chance (see box 4);

(c) Planning is about sociopolitical differences: it is less about technical forestry alternatives than about how to lessen and accommodate competing sociopolitical claims on forests;

(d) Planning begins with social and cultural values: such values, along with the provision of basic needs, weigh heavily in what people think about forests;

(e) Planning must be incremental and flexible: public participation, shared communications and information feedback enable planners to periodically redirect planning as realities change. Planning must be designed as an exercise in learning;

(f) Planning relies on the centrality of process, the quality of participation and the facilitation of the best possible relationships among stakeholders;

(g) Tremendous capacity-building efforts will be necessary in developing countries to achieve participatory planning through overcoming obstacles related to communication, transportation, language and culture, and institutional decrepitude.

2. Institutional issues

36. Because complexity and a certain amount of confrontational behaviour are inevitable in forestry planning, the quality of the institutional environment makes a substantial difference for planning success or failure. Equally important is the quality of linkages with other units of government, the general public and its special interests, and non-governmental organizations. Many public forestry administrations struggle with inadequate institutional capacity, often despite many years of faltering efforts to grow stronger.

37. Planning is further complicated in countries attempting to make the transition to a new agenda in forestry. The components of this transition can be defined in a number of different ways, but usually include enhanced efforts to establish (a) environmental management and social forestry, (b) facilitation rather than control, (c) decentralized and participatory management, and (d) greater attention to markets and prices. The extent to which such emphases are truly internalized in forestry agencies is an open question. Progress towards implementing the new agenda depends on a number of capacities:

(a) Capacity to visualize and propose forward-looking plans, policies and strategies for forestry in national development programmes (i.e., planning how to plan);

(b) Capacity to obtain and utilize a strong information base (statistics and data) to support decision-making in the forestry sector;

(c) Capacity to obtain and utilize the participation of a variety of clients (i.e., special interests) in setting agendas and policy-making;

(d) Capacity to coordinate with other governmental agencies in land-use planning, development policy and other intersectoral questions;

(e) Capacity to develop and implement sound pricing policies, tax policies, subsidies, credits and other economic instruments in forestry;

(f) Capacity to carry out activities at the regional and local levels, such as activities related to personnel numbers and qualifications, management structures, reporting and communications, and physical infrastructure;

(g) Capacity for budgeting, accounting and handling funds;

(h) Capacity to develop and utilize managerial experience;

(i) Capacity to positively affect public opinion about forestry policies and programmes through news media, public relations departments and other means.

Box 4. Strategic options for developing a full representative and supportive role for non-governmental organizations in planning processes

Options are listed in order of a possible sequence in the development of a planning process:

1. Independent capacity needs assessment/national inventory of non-governmental organizations, with information on strengths, weaknesses, problems, resources and perceived needs of each organization.

2. Full disclosure of information, and development and implementation of an information and communication strategy, based where possible on a non-governmental organizations coalition.

3. Non-governmental organizations as people's representatives in the steering committee and other formal institutional mechanisms.

4. National workshop(s) to develop a strategy for participation in the planning process with the non-governmental organizations represented.

5. Development of criteria for determining who should participate in order to ensure that all interests are represented in the planning process.

6. Rights and responsibilities of the non-governmental organizations-Government relationship defined through consensus, and formalized in writing and/or actions. Development of a procedure for reconciling possible points of disagreement in the pursuit of common goals.

7. Indicators of development, participation and capacity developed with non-governmental organizations.

8. Preliminary issues paper identifying key information needs to ensure participation, prepared with strong non-governmental organization input.

9. Training in participatory techniques and approaches for national non-governmental organizations.

10. Programme to strengthen non-governmental organizations, including support for a national coalition, training opportunities and core support for the organizations directly involved in assisting participatory local studies, microplanning and participatory evaluation.

11. Participatory local studies (stemming from the needs identified in the issues paper, see option 8 above) facilitated by non-governmental organizations.

12. Non-governmental organizations as people's representatives in round table of donors discussing financial requirements.

13. Participatory environmental projects, developed and implemented by local communities, facilitated by non-governmental organizations.

14. Microplanning of projects with involvement of local communities, facilitated by non-governmental organizations.

15. Participatory evaluation of projects and regular review of the planning process with non-governmental organizations.

38. Several variants of capacity-building along these lines are under way. The drive and approach to augment these capacities must develop internally and cannot be imposed from the top or outside. Marginalizing key players, such as forestry agencies, can be counter-productive. Moreover, prospects for transition to a new forestry agenda depend on a realistic assessment of the starting-point. Planning cannot neglect the many small steps necessary for genuine progress.

3. Policy environments

39. Forestry planning finds itself embroiled in volatile controversies over the wide choice of available policy strategies. Traditionally, forestry has relied heavily on command-and-control laws, regulations, and penalties; such an approach does not correct problems but creates new ones. Free-market strategies also fail, because forestry produces an abundance of non-market goods, services and values.

40. If neither laissez-faire nor control approaches promote social welfare, what are the alternatives? This question has not been adequately debated and requires far more discussion at all levels of forestry planning. Most resource economists argue for a third path of economic incentives, but it is not clear whether forestry planners and policy makers subscribe to this doctrine. Command-and-control methods remain popular for reasons of self-interest.

Box 5. National forestry planning and indigenous people

Chapter 26 of Agenda 21, "Recognizing and strengthening the role of indigenous people and their communities", concentrates on the improvement, protection and recognition of the rights of indigenous people, stating that they should be involved at the national and local levels in resource management and conservation strategies, such as those suggested in other programme areas of Agenda 21 (para. 26.3 (c)).

The Forest Principles recognize the importance of this involvement for all forest people, stating that Governments should promote and provide opportunities for the participation of interested parties, including local communities and indigenous people, in the development, implementation and planning of national forest policies. They also state that appropriate indigenous capacity and local knowledge regarding the conservation and sustainable development of forests should be recognized, respected, recorded, developed and, as appropriate, introduced in the implementation of programmes, and that any the benefits should be equitably shared with them. Articles 8 and 10 of the Convention on Biological Diversity support this principle in legal terms.

Until the beginning of the 1990s, very few planning processes promoted the participation of indigenous people in policy programmes and projects formulation. These people felt marginalized and ignored because their political institutions were not recognized, and they suffered from the development directed from above. During the last five years, some progress has been observed, in particular due to the creation and action of national and international alliances of indigenous people. In some cases, specific action programmes have been developed by them. The following initiatives are suggested:

(a) National forestry strategies should be developed with the full participation of local and indigenous people in order to enhance environmental, political, economic and social assessments, and proposals for agrarian reform, and in order to secure the rights of indigenous and local communities to their lands, resources and cultures;

(b) Responsible logging and other exploring activities in forests should take full account of the social, economic and political aspects of development. This orientation will involve cross-sectoral planning that enhances sustainable development and embraces both the production and livelihood of local people, so that development builds up from the forest floor and is not imposed from above;

(c) The political and social problems facing local people need to be resolved in favour of the poor and marginalized, in terms of not only their rights but also their empowerment.

III. PREPARATION FOR SUBSTANTIVE DISCUSSION

41. For the third session of the Panel, the Secretary-General will prepare a report on programme element I.1 containing further proposals for action guided by the initial discussion of the Panel at its second session. During the first session, the Government of Germany made a proposal to sponsor an expert consultation on implementing the Forest Principles on the theme "Promotion of national forest and land-use programmes". The main expert consultation will be held in Munich from 16 to 21 June 1996. In preparation for the consultation, the Forestry Advisers Group, in cooperation with the respective bilateral and multilateral organizations, will support developing countries engaging in consultations on the promotion of national forest and land-use programmes. The consultation is intended to contribute to programme elements I.1 and II (International cooperation in financial assistance and technology transfer).

42. The results are expected to include suggestions for discussion by the Panel of:

(a) Integration of forestry-sector planning with national planning cycles;

(b) Coordination of various internationally initiated planning frameworks;

(c) Coherence of national forest policy and programmes with the various international agreements and United Nations resolutions;

(d) Efficient and effective use of existing international technical and financial mechanisms, and their comparative advantages for different key issues and subsectors in forestry at the national level.

IV. ALTERNATIVES FOR ACTION AND ITEMS SUGGESTED FOR DISCUSSION BY THE PANEL

43. Sustainable forest management requires looking ahead over long time horizons. Yet contemporary opinion leaders have introduced new concepts and priorities into discussions of the question "Trees and forests, for whom and for what?". In part, this reflects increased sensitivity and sometimes alarm about perceived threats to nature, such as worries about forest health and deforestation. This is joined by increasing sociopolitical interest in the rights of indigenous peoples and the rural poor to maintain and improve their forest uses. The biological basis of forest management remains largely unchanged, but its social and political settings are vastly different from those of even 10 or 20 years ago. This new context demands a rethinking of planning priorities, tools and processes.

44. Allowing reasonable latitude for cultural differences, the following concentration areas are widely relevant:

(a) Public participation: whether in industrialized or developing countries, and at multiple planning levels, forestry planning is expected to be highly participatory so as to fairly address the question "Trees and forests, for whom and for what?". Planners need strategies to seek the views of groups

and individuals that would otherwise be underrepresented, such as those disadvantaged in terms of communications or sociopolitical power;

(b) Conflict management: wide participation in planning invites inevitable conflicts. From its inception, planning must anticipate how conflicts will be lessened and negotiated;

(c) Non-market and non-use values: the issue here is how to broaden the scope of forestry planning to address the management of the total natural environment. Leading themes include ecosystems approaches, long-term sustainability, the preservation of future options and policies that account for indirect (mainly ecological) and intrinsic values;

(d) Socio-economic performance: forestry controls and incentives must be consistent with a definition of efficiency. In addition, groups and individuals who receive forest benefits should pay the cost of providing them;

(e) Multilevel coordination: sectoral planning sets strategic directions and targets. Area, project, forest management and enterprise planning define opportunities at lower levels. How can top-down and bottom-up planning be connected to make each complement the other?

45. Some of the basic features of national forestry programmes are listed in the annex. The Panel may wish to provide guidance to the further conceptual development of such programmes, as well as to the activities to be carried out in preparation for its third session.

Notes

1/ Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992, vol. I, Resolutions Adopted by the Conference (United Nations publication, Sales No. E.93.I.8 and corrigenda), resolution 1, annex III.

2/ Ibid., annex II.

3/ See United Nations Environment Programme, Convention on Biological Diversity (Environmental Law and Institutions Programme Activity Centre), June 1992.

Annex

LIST OF 12 BASIC FEATURES OF NATIONAL FORESTRY PROGRAMMES

1. Sustainability of forest development. The essence and main purpose of a national forestry programme are to ensure the conservation, management and sustainable development of forest resources.

2. National sovereignty and country leadership. National forestry programmes are national initiatives for which the country must assume full leadership and responsibility.

3. Partnership. National forestry programmes strive to bring together all stakeholders in a process for which they will feel concerned and committed. The strength of this partnership will depend on its ability to draw upon the specific capacities of individual partners.

4. Participation. In a national forestry programme, issues, options and the resulting policies, strategies and programmes are agreed upon through participatory decision-making and consensus-building among all interested partners. Transparency and sharing of information are essential for consensus-building.

5. Holistic and intersectoral approach. National forestry programmes approach forests as diverse ecosystems comprising many interdependent elements in dynamic equilibrium, producing a variety of goods and services. Forestry includes trees in rural areas, and is practised within the context of sustainable land management, environmental stability and social and economic development. Forest dwellers are also part of this ecosystem.

6. A long-term iterative process. A national forestry programme is a cyclic process comprising planning as well as implementation, monitoring and evaluation activities. It is also an ongoing process that continuously reflects changes in the environment and the acquisition of new knowledge, even during implementation. Concrete targets and timetables are required, as well as periodic independent review and reporting.

7. Capacity-building. An essential element of a national forestry programme. Throughout the process, actions are taken to develop the planning and implementation capacity of the national institutions and other key actors with a view to decreasing dependence on external assistance, when necessary.

8. Policy and institutional reforms. One of the priorities of national forestry programmes is to ensure that the policy and institutional framework is conducive to sustainable forestry development. Programmes must address policy and institutional issues in a comprehensive manner that recognizes the interdependencies and interlinkages among sectors.

9. Consistency with the national policy framework and global initiatives. A national forestry programme must link national sustainable development plans with regional and local strategies. They should be integrated in land-use

planning that is realized at the national and local levels, as well as in programmes that are broader in scope, such as environmental action plans and actions to implement Agenda 21 and related conventions and initiatives.

10. Raising awareness. A national forestry programme must raise the visibility of the forestry sector and its priority in national agendas. The full value of forests and trees must be recognized, as well as their contribution to social, economic and environmental well-being.

11. National policy commitment. A national forestry programme must be backed by the long-term commitment of all national actors, particularly at political and decision-making levels.

12. International commitment. It is essential to ensure the long-term commitment of the international community and its institutions, which should respect the policies, strategies and programmes approved by countries and should adjust their own priorities accordingly.

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IMPLEMENTATION OF FOREST-RELATED DECISIONS OF THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT AT THE NATIONAL AND INTERNATIONAL LEVELS, INCLUDING AN EXAMINATION OF SECTORAL AND CROSS-SECTORAL LINKAGES

Programme element I.3: Traditional forest-related knowledge

Report of the Secretary-General

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INTRODUCTION

1. The Conference of the Parties to the Convention on Biological Diversity, in decision II/9(b) on forests and biological diversity, requested the Executive Secretary of the Convention to provide advice and information pertaining to the relationship between indigenous and local communities and forests, as invited by the Inter-Agency Task Force of the Ad Hoc Intergovernmental Panel on Forests.

2. The present document presents such advice and information and reports on the progress of the preparatory work on the third programme element of category I (Implementation of forest-related decisions of the United Nations Conference on Environment and Development at the national and international levels, including an examination of sectoral and cross-sectoral linkages) of the work programme of the Panel. It provides a general overview of the issue, followed by a short update of the current status, and a description of the range of considerations involved in preparing for the substantive discussion of this programme element at the third session of the Panel.

3. The work under programme element I.3 is guided by the decisions taken in April 1995, at the third session of the Commission on Sustainable Development, as further elaborated at the first session of the Panel (11-15 September 1995) and at the second meeting of the Conference of the Parties to the Convention on Biological Diversity (6-17 November 1995).

4. In the terms of reference it determined for the Panel, the Commission defined programme element I.3 as follows: "Consistent with the terms of the Convention on Biological Diversity, encourage countries to consider ways and means for the effective protection and use of traditional forest-related knowledge, innovations and practices of forest-dwellers, indigenous people and other local communities, as well as fair and equitable sharing of benefits arising from such knowledge, innovations and practices".

5. The Panel subsequently emphasized that preparation for this programme element should take full benefit of, and establish links to, the work of the Conference of the Parties to the Convention on Biological Diversity. Consistent with the terms of that Convention it should encourage countries to consider ways and means for the effective protection and use of forest-related knowledge, innovations and practices of forest-dwellers, indigenous people and other local communities, as well as fair and equitable sharing of benefits arising from such knowledge, innovations and practices. At the Panel's first session it was decided to schedule programme element I.3 for substantive discussion at the third session of the Panel, provisionally scheduled for 2-13 September 1996 in Geneva.

6. The present report was prepared by the secretariat to the Convention on Biological Diversity, as lead agency for programme element I.3, in consultation with the secretariat of the Ad Hoc Intergovernmental Panel on Forests in the Division for Sustainable Development of the Department for Policy Coordination and Sustainable Development of the United Nations Secretariat.

I. OVERVIEW

A. Objective

7. The objective of programme element I.3 is to make proposals that will encourage countries - in a manner consistent with the provisions of the Convention on Biological Diversity - to consider ways and means whereby the traditional forest-related knowledge, innovations and practices of forest-dwellers and indigenous and local communities can be effectively protected with a view to the conservation and sustainable use of biological diversity, and the benefits arising from the utilization of such knowledge, innovations and practices can be shared fairly and equitably.

8. Since the first session of the Panel, the second meeting of the Conference of the Parties has taken place in Jakarta (6-17 November 1995), at which the Conference responded to the request of the Panel to take full benefit of, and establish links with, the Conference by taking a number of decisions that bear closely upon programme element I.3 and will need to be taken into account in any work undertaken on this programme element. In its decision II/9 on forests and biological diversity, for example, the Conference requested the Executive Secretary, inter alia, to provide advice and information pertaining to the relationship between indigenous and local communities and forests, as invited by the Inter-Agency Task Force of the Intergovernmental Panel on Forests. Account will also need to be taken of the medium-term programme of work of the Conference of the Parties, which includes such items as "Knowledge, innovations and practices of indigenous and local communities" and "Access to genetic resources" (for consideration at the third meeting of the Conference in November 1996), and "Consideration of matters related to benefit-sharing" (for consideration at the fourth meeting in 1997).

B. Context

9. The Conference also decided to forward a statement to the Panel on its decision II/9, which states, inter alia, that:

> "...
>
> "4. Together, tropical, temperate and boreal forests provide the most diverse sets of habitats for plants, animals and micro-organisms, holding the vast majority of the world's terrestrial species. This diversity is the fruit of evolution, but also reflects the combined influence of the physical environment and people.
>
> "5. The maintenance of forest ecosystems is crucial to the conservation of biological diversity well beyond their boundaries, and for the key role they play in global climate dynamics and bio-geochemical cycles. Forests provide ecological services and, at the same time, livelihoods or jobs for hundreds of millions of people worldwide.
>
> "6. Forest biological diversity results from evolutionary processes over thousands and even millions of years which, in themselves, are driven by

ecological forces such as climate, fire, competition and disturbance. Furthermore, the diversity of forest ecosystems (in both physical and biological features) results in high levels of adaptation, a feature of forest ecosystems which is an integral component of their biological diversity. Within specific forest ecosystems, the maintenance of ecological processes is dependent upon the maintenance of their biological diversity. Loss of biological diversity within individual ecosystems can result in lower resilience.

"...

"8. Forests and forest biological diversity play important economic, social and cultural roles in the lives of many indigenous and local communities. The Convention on Biological Diversity addresses specifically the need to respect, preserve and maintain the knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biological diversity, as well as the need to protect and encourage customary use of biological resources in accordance with traditional cultural practices. It also encourages countries to cooperate in the development and use of indigenous and traditional technologies, and encourages the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices, in pursuance of the objectives of the Convention. Articles 8(j), 10(c) and 18.4 of the Convention provide the general framework for this."

II. CURRENT STATUS

10. The statement from the Conference also declares, inter alia, that:

"1. The Conference of the Parties to the Convention on Biological Diversity welcomes the decision by the Commission on Sustainable Development to establish an open-ended Intergovernmental Panel on Forests to pursue consensus and coordinated proposals for action to support the management, conservation and sustainable development of forests.

"2. Wishing to avoid duplication of efforts and coordinate with other relevant organisations on issues of biological diversity, the Conference of the Parties stands ready to contribute to the fulfilment of the mandate of the Panel.

"3. Keeping in mind the crucial role of forests in maintaining global biological diversity, the Conference of the Parties wishes to establish a dialogue with the Panel on issues related to forests and biological diversity.

"...

"7. Forests are becoming degraded and their biological diversity is being lost. The loss of forest biological diversity is linked to the substantial deforestation, fragmentation and degradation of all types of forests. The reasons for the loss of forest biological diversity are many, both direct

and indirect, and the Conference of the Parties takes note of the terms of reference of the Panel in this regard. (agenda item I.2)."

11. The consecutive statement of the Conference is reproduced in the annex.

12. In response to the invitation of the Panel, the Conference of the Parties has requested its Executive Secretary to provide advice and information pertaining to the relationship between indigenous and local communities and forests. The Conference of the Parties has further requested the Executive Secretary to provide advice and information concerning the contents, work and medium-term programme of work of the Convention relevant to the terms of reference of the Panel. Such advice and information will be provided in time for the Panel's third session.

13. The Panel may also receive substantive inputs from the Convention following the third meeting of the Conference of the Parties on, inter alia, the underlying causes of biological diversity loss in forest ecosystems, components and dynamics of biological diversity, and ways and means for the effective protection and use of traditional forest-related knowledge, innovations and practices of forest-dwellers, indigenous and local communities, as well as fair and equitable sharing of benefits arising from such knowledge, innovation and practices.

14. The wide range of issues embraced by programme element I.3 is demonstrated by the number of decisions taken by the Conference at its second meeting which relate closely to this item. In addition to decision II/9, already referred to, they include:

(a) Decision II/10: "Conservation and sustainable use of marine and coastal biological diversity";

(b) Decision II/11: "Access to genetic resources";

(c) Decision II/12: "Intellectual property rights";

(d) Decision II/15: "FAO global system for the conservation and utilization of plant genetic resources for food and agriculture";

(e) Decision II/16: "Statement to the International Technical Conference on the Conservation and Utilization of plant genetic resources for food and agriculture";

(f) Decision II/8: "Medium-term Programme of Work of the Conference of the Parties for 1996/97".

15. In addition to the work requested by the Conference, a number of other areas of activity are already in hand. For example, the Food and Agriculture Organization of the United Nations (FAO) is revising the International Undertaking on Plant Genetic Resources, as well as developing the concept of "farmers' rights" and developing a global plan of action, the results of which will be reported to the Conference at its third meeting. The activities of the United Nations Educational, Scientific and Cultural Organization (UNESCO) under

the World Heritage Convention are also relevant, particularly in view of the recognition of the interaction between human beings and nature in the formation of "cultural landscapes". Coordination with the World Trade Organization (WTO) in its implementation of the General Agreement on Tariffs and Trade (GATT) (Uruguay Round) will also be critical if efforts to promote global trade are to be supporting of, and not run counter to, the objectives of the Convention.

III. APPROACHES

16. Advances in technological, technical and scientific studies on the nature and substance of indigenous and traditional knowledge and forest management practices underlines the necessity for a broad, coordinated approach. Among the advances already made in this direction is the emergence of scientific evidence to the effect that:

(a) The language, culture and knowledge of indigenous and local communities are disappearing at alarming rates;

(b) Many presumed "natural" ecosystems or "wilderness" areas are in fact "human or cultural landscapes" resulting from millennial interactions with forest-dwellers;

(c) Traditional ecological knowledge is complex, sophisticated, and critically relevant to understanding how to conserve forest ecosystems and to utilize them sustainably;

(d) Indigenous and traditional forest management systems are likely to focus on the conservation of non- or semi-domesticated, non-timber species because these provide the majority of food supplies, medicines, oils, essences, dyes, colours, repellents, insecticides, building materials, clothing, etc.;

(e) Most species associated with forests possess existence values for local communities which are often ignored, obscured or even cancelled out by imposed conservation, development and market schemes;

(f) As indigenous and local communities frequently integrate forest and agricultural management systems, "foresters" and "farmers" can be seen as forming part of the same continuum.

17. The point highlighted in paragraph 16 (f) above can be read to imply that farmers' rights issues are inextricably linked to issues addressed in the Convention on Biological Diversity about the relationship of indigenous and local communities with forests. Recognition of and respect for local values, as well as landscapes modified by human activities, are crucial if the vitality of forest-dwelling societies is to be enhanced rather than undermined. Unfortunately, since the complex links between biological and cultural diversity have not been generally recognized in the past, this has led to the destruction of biological diversity and to the disappearance of languages, cultures and societies.

18. One way to forge effective links with local communities could be through the development of sui generis systems to protect indigenous and local communities and ensure benefit-sharing from the wider use and application of their knowledge about forest use and management - as well as of the biogenetic resources conserved on their lands and territories. Adequate and effective protection and benefit-sharing mechanisms would inevitably require a shift from economic or ecologically determined legal and political frameworks to rights-driven systems. Adopting such a course would, however, enable commitments made by countries under human rights conventions, covenants and agreements to be harmonized at the national level with international commitments on environment, development and trade. It should also enable the provisions of the Convention on Biological Diversity to generate options for stimulating the equitable use and application of the traditional knowledge, innovations and practices of forest-dwellers. Such options could emerge from, inter alia: (a) country studies (article 6); (b) national surveys and inventories (article 7); (c) impact assessment (article 14); (d) exchange of information (article 17); (e) clearing-house mechanism (article 18); and (f) the subsidiary body of scientific, technical and technological advice (article 25).

19. The successful implementation of these mechanisms will depend upon, among other things, effective leadership from among local people, based on criteria for carrying out their own inventories, evaluations, monitoring, impact assessments and development programmes for forest use and conservation, drawing upon their cultural aptitudes and based on their traditional knowledge and local criteria. Support from external sources will require the development of more effective tools for intercultural dialogue, information exchange, technology training, awareness-raising and education, as well as for interdisciplinary collaboration between the human, natural and social sciences.

IV. PREPARATION FOR SUBSTANTIVE DISCUSSION

20. For the Panel at its third session, the Secretary-General will prepare a report presenting some proposals for addressing the issues raised under programme element I.3. To the extent possible and within the available time-frame, the report will take into account emerging developments, with particular reference to any advice and information that results from the exercise requested of the Executive Secretary at the second meeting of the Conference of the Parties. In the meantime, the Panel might wish to begin initial consideration of a few areas that require priority attention, with a view to a substantive discussion at the third session, as set out below. It is emphasized that at this stage these are no more than possible ideas for further consideration in the light of emerging information and advice. The ideas include:

(a) Helping to identify relevant principles, guidelines and mechanisms for countries to develop their own appropriate and effective sui generis system(s), such as traditional resource rights, in order to implement article 8 (j) (requiring that States "respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles", while encouraging the "equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices");

(b) Providing technical, technological and scientific advice on traditional knowledge, innovations and practices of forest use and conservation, including:

(i) Development of methods for the acquisition, evaluation and analysis of traditional technologies;

(ii) Procedures for the storage, retrieval and dissemination of information;

(iii) Identification of constituents, stakeholders, users and/or beneficiaries;

(iv) Development of tools and mechanisms for protection and benefit-sharing;

(v) Identification and application of methodologies for the appropriate utilization of indigenous and local community ethno-ecological concepts; and establishment of criteria for identification, monitoring and environmental impact assessment, as well as enhanced public education and awareness.

(c) Identifying and stimulating the creation of additional sources of funding for indigenous and local communities to finance their own forest and biodiversity conservation efforts;

(d) Identifying and stimulating the creation of additional sources of funding for studies and wider application of traditional knowledge, innovations and practices, including education and training to enhance application and use of such knowledge, innovations and practices.

V. PROPOSALS FOR ACTION

21. The second session of the Panel might wish to take note of this progress report and provide further guidance in the preparation of the report for substantive discussion at the third session of the Panel.

Annex

STATEMENT ON BIODIVERSITY AND FORESTS FROM THE CONVENTION ON BIOLOGICAL DIVERSITY TO THE AD HOC INTERGOVERNMENTAL PANEL ON FORESTS OF THE COMMISSION ON SUSTAINABLE DEVELOPMENT

1. The Conference of the Parties to the Convention on Biological Diversity welcomes the decision by the Commission on Sustainable Development to establish an open-ended Intergovernmental Panel on Forests to pursue consensus and coordinated proposals for action to support the management, conservation and sustainable development of forests.

2. Wishing to avoid duplication of efforts and coordinate with other relevant organizations on issues of biological diversity, the Conference of the Parties stands ready to contribute to the fulfilment of the mandate of the Panel.

3. Keeping in mind the crucial role of forests in maintaining global biological diversity, the Conference of the Parties wishes to establish a dialogue with the Panel on issues related to forests and biological diversity.

4. Together, tropical, temperate and boreal forests provide the most diverse sets of habitats for plants, animals and micro-organisms, holding the vast majority of the world's terrestrial species. This diversity is the fruit of evolution, but also reflects the combined influence of the physical environment and people.

5. The maintenance of forest ecosystems is crucial to the conservation of biological diversity well beyond their boundaries, and for the key role they play in global climate dynamics and bio-geochemical cycles. Forests provide ecological services and, at the same time, livelihoods or jobs for hundreds of millions of people worldwide.

6. Forest biological diversity results from evolutionary processes over thousands and even millions of years which, in themselves, are driven by ecological forces such as climate, fire, competition and disturbance. Furthermore, the diversity of forest ecosystems (in both physical and biological features) results in high levels of adaptation, a feature of forest ecosystems which is an integral component of their biological diversity. Within specific forest ecosystems, the maintenance of ecological processes is dependent upon the maintenance of their biological diversity. Loss of biological diversity within individual ecosystems can result in lower resilience.

7. Forests are becoming degraded and their biological diversity is being lost. The loss of forest biological diversity is linked to the substantial deforestation, fragmentation and degradation of all types of forests. The reasons for the loss of forest biological diversity are many, both direct and indirect, and the Conference of the Parties takes note of the terms of reference of the Panel in this regard (Panel agenda item I.2).

8. Forests and forest biological diversity play important economic, social and cultural roles in the lives of many indigenous and local communities. The

Convention on Biological Diversity addresses specifically the need to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biological diversity, as well as the need to protect and encourage customary use of biological resources in accordance with traditional cultural practices. It also encourages countries to cooperate in the development and use of indigenous and traditional technologies, and encourages the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices, in pursuance of the objectives of the Convention. Articles 8 (j), 10 (c) and 18.4 of the Convention provide the general framework for this.

9. In addition, the Convention on Biological Diversity recognizes in article 15 the sovereign rights of States over their genetic resources and also recognizes that the authority to determine access to these resources rests with the national Governments and is subject to national legislation. It also states that each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of the Convention. Such access, including forest-based genetic resources, shall be subject to prior informed consent by the Party providing such resources and shall be on mutually agreed terms. Measures shall be taken with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the party providing such resources. Such sharing shall be on mutually agreed terms.

10. The Conference of the Parties emphasizes and requests the Panel to acknowledge the need to integrate the conservation and sustainable use of biological diversity into relevant sectoral and cross-sectoral plans, programmes and policies (Convention on Biological Diversity, article 6 (b)). The Conference of the Parties requests the Panel to note that it intends to explore how the conservation and sustainable use of forest biological diversity could be assisted by the establishment of specific environmental goals in the forest and other sectors. The Conference of the Parties also requests the Panel to consider appropriate environmental impact assessment of sectoral activities, plans, programmes and policies with expected negative impact on forest ecosystems (Convention on Biological Diversity, article 14) (Panel agenda item I.2).

11. The Conference of the Parties notes the mandate of the Panel concerning methods for the proper valuing of the multiple benefits derived from forests. In this context, it requests the Panel to consider the economic (monetized and non-monetized) benefits, the environmental services and non-consumptive values provided by forest biological diversity, including the important cultural, religious and recreational values of forests (Panel agenda items III.1 and IV.1).

12. The Conference of the Parties recognizes the need to develop and implement methods for sustainable forest management which combine production goals, socio-economic goals of forest-dependent local communities, and environmental goals, particularly those related to biological diversity. Sustainable forest management should ensure that components of biological diversity are used in a

way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs of present and future generations (Convention on Biological Diversity, article 2). Sustainable forest management should take an ecosystem approach and aim at securing forest quality as related to the Convention on Biological Diversity, comprising such elements as forest composition, natural regeneration, patterns of ecosystem variation, ecosystem functions and ecosystem processes over time. Special attention should be paid to components of biological diversity under threat (Panel agenda items III.2 and I.5).